

FLIGHT

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Air Raid Precautions

CURIOS reactions may follow the issue of the Government's circular to local bodies on the subject of air raid precautions. Pacifists may well gloat over it, for many of them believe that to emphasise the horrors of war is the best way to make the world peaceable. The conclusion which they draw is that we ought to abolish all our armed forces, and in particular our air forces. Every sane person in this country desires peace, and the Government is working hard to bring about peace pacts and a consequent reduction of armaments; but that does not always mollify the militant pacifists. Another school of thought, which we may call the extreme air school, rejoices in descriptions of the horrors of air bombardment as an argument for increasing our air forces. The Government has decided on an increase, although it hopes for universal reduction as a result of agreement, but it is far from impossible that the extreme air school will use this circular as an excuse for flogging the Government. Other people will argue from this circular that no international agreements are of any value, because the circular is largely concerned with steps to be taken in case existing agreements are broken. Calm consideration of the circular is very desirable.

The circular (the chief contents of which are set out on page 84) states in its preamble that the use of poison gas in war is forbidden by the Geneva Gas Protocol of 1925, to which this country and all the most important countries in Western Europe are parties. This very important fact ought to be well known, but as a matter of fact most people have forgotten it. So many documents with outlandish titles, such as "protocol," have issued from Geneva that the ordinary person is to be excused if he has overlooked most of them. This international prohibition of poison gas warfare ought to be advertised everywhere, broadcast, repeated and re-repeated with all the resources of modern propaganda, printed in letters of gold and hung up in all public places as the greatest achievement of Geneva. It should be

"familiar on men's lips as household words." The more widely the knowledge of this beneficent Protocol is spread the more impression it will make, and consequently the greater will be the hesitation of even an unscrupulous belligerent to break the rule. Every child should grow up with the idea firmly rooted in its mind that poison gas must not be used in war. Such collective thought usually produces a result.

High Explosive and Gas

Even if such publicity had been awarded to this prohibition of gas in war it would still have been prudent for the Government to take steps to minimise the disaster in case the rule were to be broken. As the rule was certainly not common knowledge the need for precautions is greater. That does not imply that the rule is likely to be broken, for actually no gas agreement was broken even in the Great War. Germany had not signed the gas convention drawn up some time before 1914. That does not make the gas attack on Ypres on April 22, 1915, any less brutal, but it does show that agreements have force in time of war. Inevitably, the Allies retaliated on the western front, but the use of gas did not spread to any other front where Germany's allies were engaged. Above all, poison gas bombs were not dropped on residential areas in enemy towns.

In a future war some nation may be both brutal and unscrupulous, and for that reason the British Government is only exercising common sense in making preparations. It should be noted that the precautions are divided into two classes, action in the case of gas attack and action in the case of high-explosive bombing. The latter may be quite a legitimate act of war, the bombs being aimed at some military objective but missing it and causing casualties. It is not practicable to forbid the use of aircraft to attack military objectives. The two classes of air bombing should be kept quite distinct in the mind.

The Government circular naturally does not go into details, and it is not possible to judge from it whether the steps recommended are likely to be effective. Bom-

bardment, by aircraft or by guns, is apt to disarrange at times the most elaborate palliative measures. Only when details are worked out and made public can any opinion be formed as to whether they are likely to do much good. Preparation, however, is clearly necessary in case the worst should befall. This circular is to be commended as a complement to the other two vital steps of working for peace and strengthening our defences.

Getting Together

AN interesting history might be written about the relations of the aircraft industry and various Government departments. Mr. C. R. Fairey once read a paper on the subject before the Royal Aeronautical Society, starting with the pre-war period when constructors enjoyed dealing with the Admiralty but had little love for the War Office and the Royal Aircraft Factory. At the time of the lecture, which was somewhat subsequent to the production and adoption of that notable P.V. machine the "Fox," the lecturer held that the relations of the trade with the Air Ministry had become very satisfactory. The Ministry was anxious, among other things, to place the results of official research at the disposal of the constructors, and this was, and is, of the greatest benefit to the drawing offices of the firms.

The Aeronautical Research Committee works under the auspices of the Government, and does a very great deal of research work, as its name suggests that it should. The results of its labours are published in a series of reports which are available for the industry. For some time past, however, there has been a feeling that the methods by which the industry and the committee work together could be improved. The feeling may not have been strong, but it was certainly undesirable that it should exist, and more undesirable still that there should be a chance of its growing stronger. The time had obviously come when the two sides of the aircraft business, the research side and the production side, should get together and exchange ideas.

It was this feeling which led Mr. H. T. Tizard, Chairman of the Aeronautical Research Committee, to propose an aircraft conference to discuss the whole matter. The conference was held last week, papers were read, and members on both sides expressed their views as to what could be done to improve the position. The conference was not open to the public, but we are able to publish certain facts about it on the opposite page. That the results will be beneficial to both parties there is no doubt, and the wisdom of getting together when some sort of reform seemed desirable shows a very happy spirit and is a good augury for harmonious workings in the future.



"DIRTY WEATHER": A fine impression by a *Flight* photographer of the sight that greets the pilot as he climbs through one layer of cloud only to discover another layer above. It is not often that the camera so faithfully reproduces the forbidding appearance of rain clouds seen at close quarters.

The Outlook

A Running Commentary on Air Topics

Science and the Trade

NOTHING can be more conducive to rapid commercial success in any form of engineering undertaking than a close and amicable relationship between the research and production sides.

Often, when the research is carried out by a Government Department, a feeling grows up that there is something inimical to that close relationship in the mere fact that a Government Department can never have the same outlook as can a commercial concern. For this reason some industries have set up their own research establishments, while others have formed an association of their own members for the purpose of bringing about a free interchange of information and ideas.

An Aircraft Conference

LAST week Mr. H. T. Tizard, chairman of the Aeronautical Research Committee, brought together both the scientific and commercial sides of the industry at an Aircraft Conference.

It was evident from the first that a strong feeling exists in the industry that there is a pressing need for a freer interchange of information between the A.R.C. and the industry.

Perhaps the most radical suggestion was that made by Sir Richard Glazebrook, and supported by Professor L. Bairstow, that a manufacturers' research association should be formed. It did not seem quite clear as to whether it was intended that such an association should actually undertake practical research work, or whether it should merely act as a disseminator of information supplied by the A.R.C.

If we may, without in any way wishing to teach the aircraft industry its business, we should like to express the opinion that neither alternative would actually meet its needs. It seems to us that what is wanted is something like a cross between the American organisation and our own.

An S.B.A.C. Technical Department

IT should be possible to widen the scope of the Society of British Aircraft Constructors to include a technical department which would not only establish a liaison between the A.R.C. and the industry, but, managed by the ablest technician who could be obtained, would keep in very close touch with technical development abroad, and would make available to its members all such relevant information.

The question of patents was also brought up, but this seemed rather to cloud the issue than otherwise. It did not appear clear whether it was suggested that the proposed manufacturers' research association should also act as a form of patents pool or not, but we cannot help feeling that such a set-up is not likely to be so successful in England as it appears to be in the United States, and on the whole it would appear advisable that at this juncture the question of patents be left out, at least until the more important one of dissemination of information has been dealt with.

It rather looks as if the present situation has been brought about because of the comparative lack of consulting engineers in the aircraft industry. In the old days it was the consulting engineer who maintained the liaison between the research bodies and the industry itself, and who also kept his finger on technical development abroad.

Some aircraft firms still make use of consulting engineers, but generally only for specific problems, so that there seems to be no real reason why the scope of the S.B.A.C. should not be widened very considerably on the lines that we suggest.

Modification of A.R.C. Reports

IT was obviously the general opinion of the members that the reports sent out by the A.R.C. could, with benefit, be simplified and changed in form, and we rather gather that the A.R.C. itself agrees with this view. There is yet another aspect of the S.B.A.C. suggestion—that is, the value it would have in consolidating the industry in the nation's eyes. The aviation industry is primarily dependent upon taxpayers' money, and, as such, has a duty to the public, not the least part of which is to keep abreast of development abroad so that Britain's aircraft may be at least as good as, if they cannot be better than, those of other countries. If it does not form some organisation which ensures that it reaps the benefit of research work throughout the world, it must then expend money and time of its own staffs in getting that information itself; and the experience of other industries is that it is far cheaper to get together and obtain such information collectively. There is little doubt that collective effort of this nature is the kind of effort which is looked upon with favour by the public, and, moreover, it places that industry in a strong position successfully to combat the attacks which are inevitably made by politicians on successful industries.

We feel, therefore, that Mr. Tizard's action in bringing about this conference is one which deserves the warmest thanks of everyone, and we hope that it will be but the forerunner of many similar conferences, each of which may prove even more productive than its predecessor.

The Schiphol Accident

EVERYBODY both inside and outside the air transport business is full of sympathy for the Royal Dutch Air Lines and for A.B. Aerotransport concerning Sunday's tragedy, but most people will prefer to express it by travelling as usual by K.L.M. or by another service. It is significant that several of the thirteen survivors continued their journey by air.

After all, the news that an express has jumped the rails and killed fifty trusting passengers does not discourage anybody from travelling by trains, which are, for the most part, extremely safe conveyances. One can only wish that more people who are actively concerned with the business of building aeroplanes would use air services with enthusiasm.

The Fokker F.22 was, of course, leaving Schiphol on its way to Copenhagen and Malmö on the Scandinavian Air Express route, which is operated on alternate days by K.L.M. and A.B.A. Two facts stand out amidst the various pieces of evidence. Both the port engines lost their power during the take-off, and Cdr. Silberstein was an extremely experienced pilot and was known to have what is now spoken of as the "Nordic temperament." Even the F.22 could not climb on two engines, and a man of Silberstein's calibre would not turn back if he could help it.

It remains, then, to discover why the port engines suffered from a sudden fuel shortage and to make quite certain that such a failure can never again occur on a commercial machine.

[Contd. overleaf.]

Another accident, rather similar in its consequences, and involving the lives of two passengers, occurred at Heston on Tuesday morning to a "Dragon" belonging to British American Air Services. Our internal and charter services have, during the past few years, been almost entirely free from really serious mishaps, and we can only tender our sympathy to those concerned and hope that the air-travelling public will think logically before making any drastic decisions.

The Pou Population

THINGS have been moving very fast in the British Pou-du-Ciel world during the last week or two. In the first place, Mr. S. V. Appleby last week-end made a number of circuits in his Ford-engined machine, and he tells us that he found it very controllable; a photograph of one of his first "hops," taken at Heston last week, appears below.

Air Cmdre. Chamier, Secretary-General of the Air League, who has been also sponsoring the "Pou" in this country, is almost ready to make trial flights with the "Pou Club's" official machine, which has been built under the supervision of Mr. Oliver Rorke, of Fulham, and with the assistance of students of the College of Aeronautical Engineering.

Thirdly, two enthusiasts in the North, Messrs. Philip Priest and Cyril Brooke, have practically completed their machines, some details of which also appear below. Mr. Priest says that these two "Pous" have taken two months' hard work to build, and he feels it rather a big job for anyone to do single-handed unless the builder has a great deal

of spare time; he feels that when components such as landing gear, tail units, petrol tanks, engine mountings, and control units can be obtained ready made, things will be very much simplified.

A fourth "Pou" which is nearing completion is being built in Surbiton, Surrey, by a Mr. Wood.

There are rumours of various others being laid down.

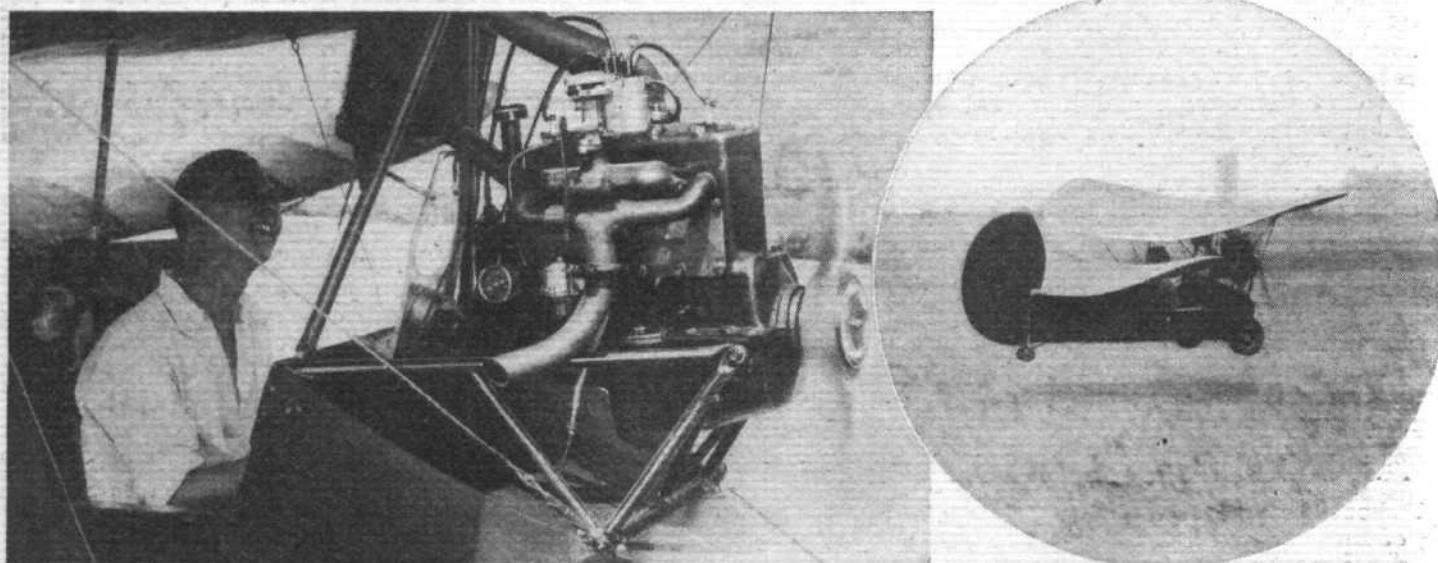
Engine-power Figures

THE study of foreign aero engine specifications by the uninitiated may result in the discovery of some seemingly remarkable figures. Power-to-weight ratios particularly, may, in certain cases, appear considerably better than those attained by British firms.

It should be realised that general durability and the length of the period to be run between overhauls are governing factors. The figures for between-overhaul periods achieved by some of the engines employed by the R.A.F. are probably unexcelled, and in their standard service form these engines, nevertheless, deliver creditable powers for their weight. Should the period between overhauls be reduced, however, their outputs could be raised accordingly.

Doubtless the Air Ministry knows what it wants from its engines. Probably the long periods between overhauls were dictated by economy measures.

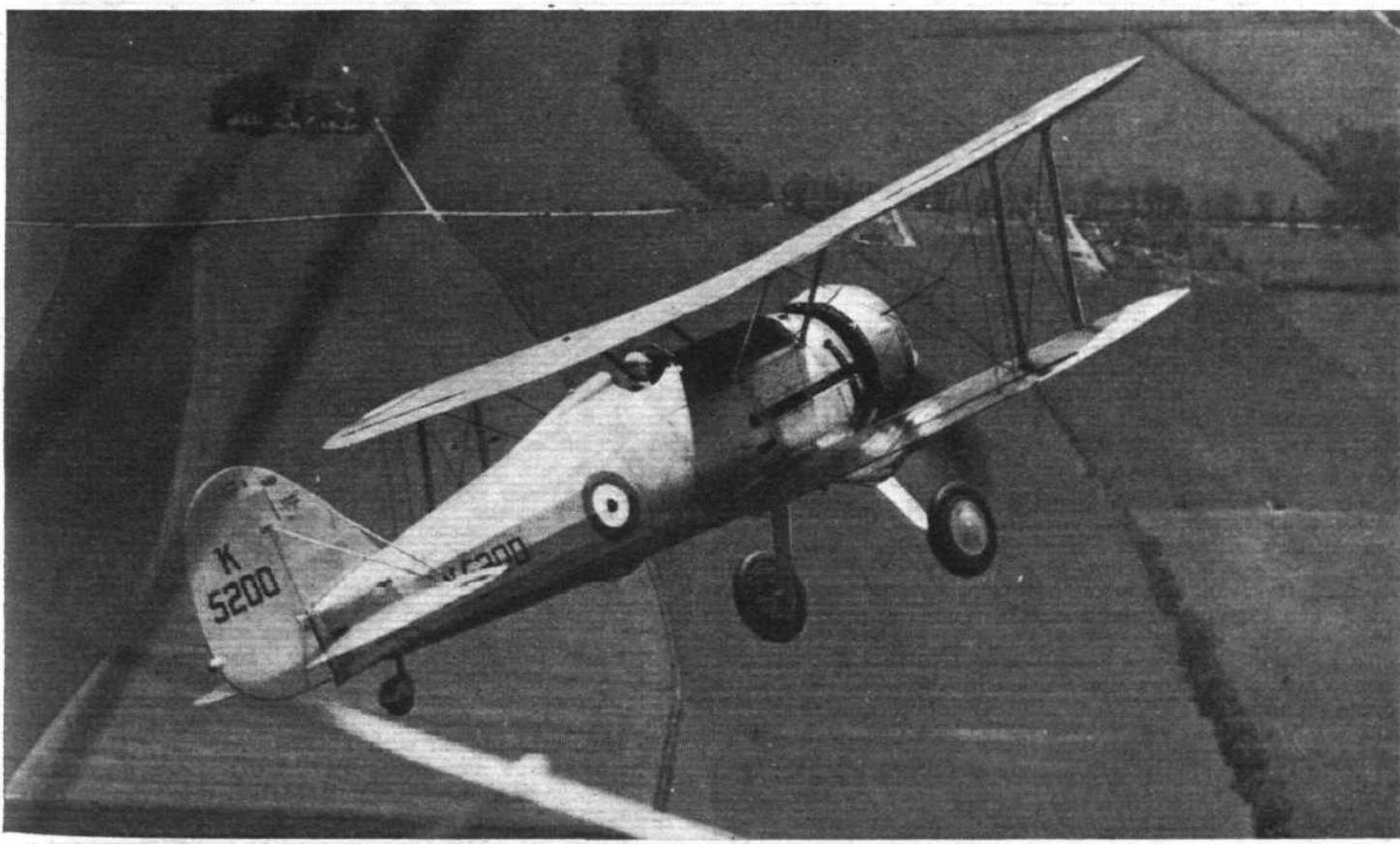
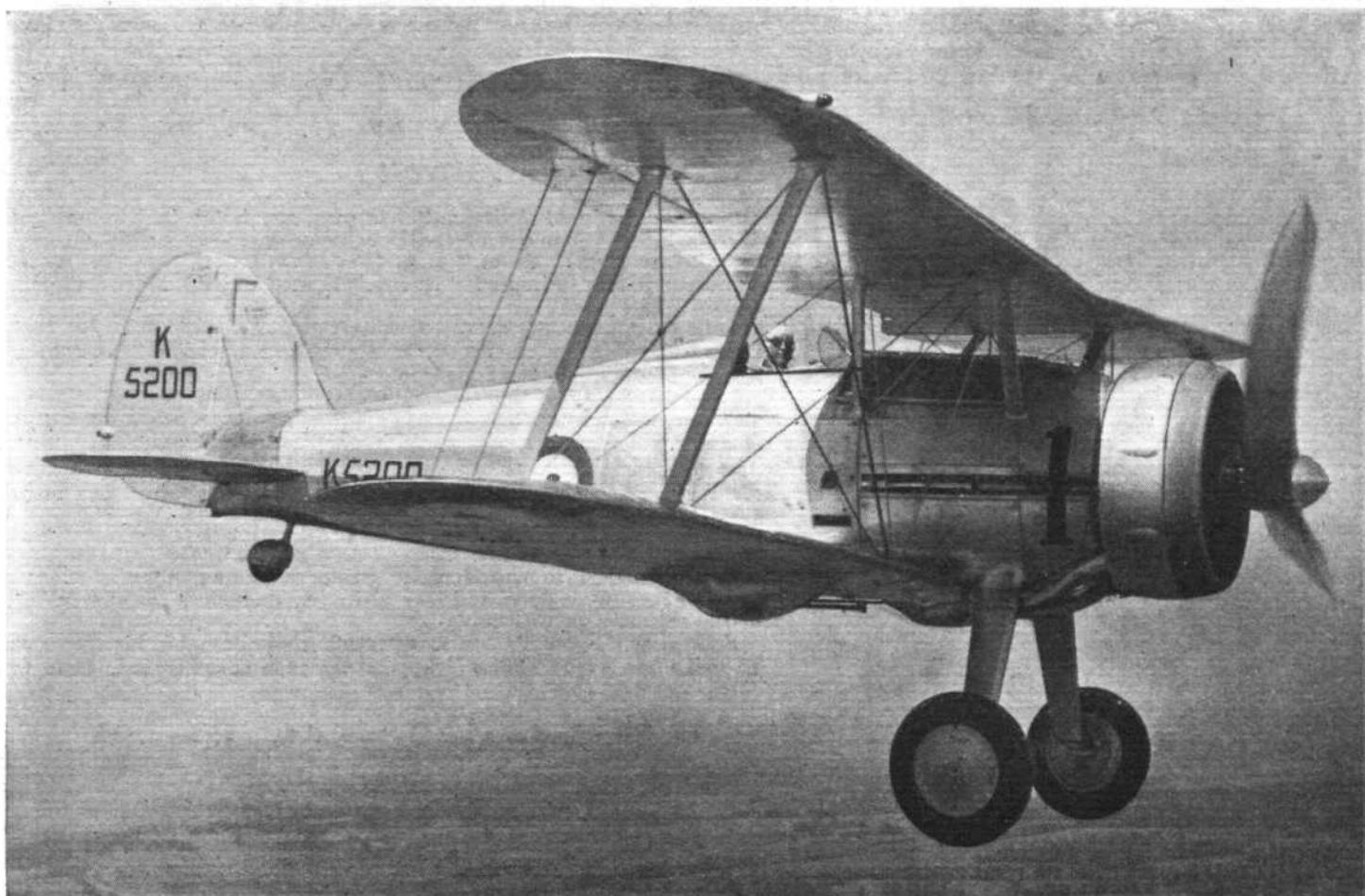
The Rolls-Royce Schneider engine gave some indication of how a power plant, basically of normal service type, can be stepped up if necessary. Although developed from the "Buzzard," normally rated at 825 h.p., and weighing 1,540 lb., the racing engine gave 2,300 h.p. for an increase in weight of only 110 lb.



A BRITISH "POU" FLIES. The *Flight* photographs above show Mr. Appleby with his Pou-du-Ciel (special 10 h.p. Ford engine) and (in circle) during one of his initial "hops" at Heston a few days ago. On the right is the "Pou" built by Mr. Philip Priest of Huddersfield, with the help of his cousins, Allen, Kenneth, and Geoffrey; its behaviour during experimental taxiing has been promising. At present it is fitted with a Douglas motor cycle engine, but awaits a special Scott unit, as does the Pou built by Messrs. C. Brooke, A. Morton and F. Lawton, also in Huddersfield. Mr. Priest says that he and Mr. Brooke have each spent about £30 on their "Pous," so, unless the matter of a C. of A. proves troublesome, the total cost, with engine, should be about £75 in each case.



A FOUR-GUN FIGHTER for the R.A.F.



These photographs of the Gloster F. 7/30 are of particular interest, because a number of these day-and-night fighters, with 605 h.p. Bristol "Mercury" engines, have been ordered by the Air Ministry. The pictures were taken by *Flight's* photographer from a Hawker "Hart" flown by Fit. Lt. P. W. S. Bulman, who made a rendezvous with Fit. Lt. P. E. G. Sayer in the F. 7/30 midway between Brooklands and Gloucester. Two of the F. 7/30's guns are in the fuselage and two under the wings.



Surrounded by "decoraments," as a youthful spectator described the floral embellishments of the control tower at Leicester, Sir Philip Cunliffe-Lister surveys the aerodrome while making his opening speech. By the Chance shadow-bar floodlight are Mr. W. Lindsay Everard and Alderman W. E. Wilford (in hat) (Flight photographs)

In a delightful speech, every word of which could be heard plainly, Sir Philip Cunliffe-Lister, Secretary of State for Air, formally declared the new Leicester Municipal Airport open last Saturday, July 13. He explained the great significance of the occasion, and praised the forethought of the City Corporation in having secured such an admirable site for what would undoubtedly eventually turn out to be an excellent investment.

The Secretary for Air was introduced by Alderman W. E. Wilford, chairman of the Aerodrome Committee, who explained that, although the site had been purchased seven years ago, there had been considerable, but unavoidable, delay in opening it as an aerodrome. He also pointed out that the delay had been a profitable one in some ways, as not only had they an excellent aerodrome, but it was now within the city borders. The Lord Mayor, Alderman E. Grimsley, presented Sir Philip with a silver casket in commemoration of the occasion, and in a brief speech of presentation announced that, subject to certain requirements, the aerodrome had been approved for customs purposes.

Mr. W. E. Lindsay Everard, M.P., asked for a vote of thanks to Sir Philip for coming to open the airport, and in doing so he reminded his listeners of the great part which had been played in its development both by the Leicestershire Aero Club and the Leicester Chamber of Commerce.

To start the programme there was an arrival competition, which was won by the Duchess of Bedford, who flew solo in her own "Moth." The Duchess, who may be called "the

A LEICESTERSHIRE INAUGURATION

Leicester's Municipal Airport Opened by the Air Minister : Fine Display by R.A.F. and Civil Aircraft

"Grand Old Lady of Aviation," has over 200 hours in her log book. During lunch a number of civil machines were demonstrated. These included an Avro "Cadet," B.A. "Swallow," D.H. "Hornet Moth," Monospar S.T.25, Airspeed "Envoy," B.A. "Eagle," Miles "Falcon," and others.

Following lunch the actual opening ceremony took place, Sir Philip having flown to the aerodrome in the "Dragon Rapide" used by the R.A.F. Communications Squadron.

Immediately after the ceremony came the main part of the programme, which consisted of chosen items from the programme of the Royal Air Force Display, which took place at Hendon on June 29. The first event was the instructor and pupil act by F/Os I. V. Hue-Williams and R. G. Arnold, the latter being the instructor. The act was perhaps even better than was seen at Hendon, because it was closer to the spectators, and although it did not actually involve a crash, it was almost as hair-raising. As a matter of fact, all the R.A.F. events were seen to considerably greater advantage than at Hendon, because they were done at lower altitudes, and more directly in front of the majority of the spectators.

Following the pupil's hectic attempts to imitate his instructor and to make his Avro "Tutor" apparently as well controlled, there was



an air combat between an "Overstrand" of No. 101 (Bomber) Squadron, piloted by F/O. G. J. Read, and three "Fury" aircraft of No. 1 (Fighter) Squadron, piloted by Flt. Lt. T. N. McEvoy, P/O. W. Loxton and Sgt. S. Wroath. Although one of the "Furies" was "shot down" at a very early stage in the combat, and although the "Overstrand" was thrown about almost as much as were the single-seaters, the fight was somehow less convincing of the superiority of a multi-gunned large machine than when this act was first staged some years ago. Another of the "Furies" would undoubtedly have been brought down quite early during the encounter, while the "Overstrand" had a "Fury" sitting underneath its tail for a very considerable time, but without any apparent effect. We have seen a fight such as this when the "Overstrand" quite obviously and genuinely had everything its own way, but at Leicester there is little doubt that the "Furies" would have got the better of the battle.

After the requisite amount of smoke had been emitted from under both lower wings of the "Overstrand" and she had dived at an incredibly steep angle for such a large machine, No. 19 (Fighter) Squadron of "Gauntlet" aircraft was led into the air by Sqn. Ldr. J. R. Cassidy. This squadron was

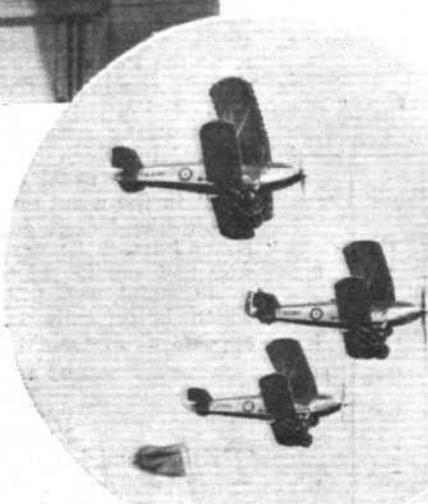


(Above) Lt.-Cdr. C. W. Phillips, R.N. (retd.), who won the Grosvenor Trophy in Mr. Lindsay Everard's "Moth" ("Gipsy III"). The engine is historical, as it is the one which the late Miss Winifred Spooner purchased for her Breda machine for competitions in Europe. (Centre) The flight of Hawker "Harts" from No. 605 County of Warwick (Bomber) Squadron, Auxiliary Air Force, which flew in perfect formation from Castle Bromwich. (Bottom) Caught by the camera in an unguarded moment—pilots of the flight of No. 25 (Fighter) Squadron, who gave such an excellent aerobatic display in Hawker "Fury" aircraft. Flt. Lt. C. R. Hancock has F/O. E. A. Douglas-Jones on his left and Sgt. Pearson on his right. (Flight photographs)

seen at Duxford, as well as at Hendon, but never to such advantage at last Saturday; moreover, the radio telephony arrangements for broadcasting the Squadron Leader's commands were excellent and could be heard all over the ground. The actual drill itself was as usual, such as formation into flights in echelon to port; the whole squadron in echelon formation; squadron vee; and squadron in flights astern; but a note of originality was lent by finishing up with an excellent representation of the letter "L," standing, so we were told, for Leicester.

Flight Aerobatics

The final event of the R.A.F. part of the programme was flight aerobatics by three pilots of No. 25 (Fighter) Squadron, Flt. Lt. C. R. Hancock, F/O. E. A. Douglas-Jones and Sgt. Pearson, flying Hawker "Fury" aircraft. Here, as before, the fact that the flight flew lower and closer to the crowd enhanced their exhibition enormously; even the actual performance of the various aerobatic manœuvres was, if anything, better than we have seen before, and the precision and accuracy with which the whole flight rolled, looped and cartwheeled as a unit simply beggars description. The manner and apparent ease with which they actually changed formation during a loop, or similar manœuvre, was a testimony both to the aircraft and to the pilots. It was laid down by Sqn. Ldr. H. J. Saker, who relieved Mr. E. C. Brown at the microphone



in order to broadcast a commentary on the R.A.F. part of the Display, that a demonstration of this nature depended upon three things: (1) absolute air discipline, (2) complete and precise control of each pilot over his aircraft, (3) an exact judgment of speed. The way in which these three pilots kept station, regardless of whether they were on their backs, flying vertically, or for that matter in any other position, proved the veracity of Sqn. Ldr. Saker's contentions. It was almost impossible to pick out any one part of the display by this squadron, as all their manœuvres were well-nigh perfect; but two of these, perhaps were a little more worthy of praise than the others, namely, the half-roll in flight "V" formation off the top of a loop, and the way in which the whole flight, again in "V" formation, made a perfect aileron turn with their leader as a pivot while diving almost vertically.

The Grosvenor Trophy Race

So much for the R.A.F. part of the Display. At this juncture the eleven entrants for the Grosvenor Challenge Trophy Race were marshalled on to the starting line on the aerodrome. While they were being lined up Mr. B. G. de Greeuw jumped out of one of the Leicester Aero Club's "Moths," pulled the "ring" of his G.Q. parachute, and landed safely near the centre of the aerodrome. Then Mr. S. A. Thorn once again proved that he is second to none when it comes to smooth, accurate and beautifully timed aerobatics. The "Genet Major" engine of his Avro "Cadet" was fitted so that it would continue to run when the machine was inverted; Mr. Thorn, therefore, had unlimited scope, and throughout his display was as often on his back as the correct way up. The "Cadet," of course, is an admirable machine for an aerobatic display, and in the hands of Mr. Thorn is both graceful and beautiful. Probably the most outstanding part of his exhibition were his wonderfully slow rolls, which, although carried out smoothly and steadily, seemed to take minutes to complete.

The Grosvenor Challenge Trophy Race was over two laps of a triangular 42-mile course, and was open to British pilots flying British machines only. The course from the Leicester Municipal Airport lay to Mr. Lindsay Everard's private aerodrome at Ratcliffe and back to the Airport, with a turn around the well-known Leicestershire landmark, "Old John," in Bradgate Park.



The handicapping was in the hands of those arch-experts, Capt. W. Dancy and Mr. F. Rowarth. As our table of the result shows, the speeds of the machines varied from 99 to 171 m.p.h. Racing, more often than not, is comparatively dull for the spectators, as there must, of necessity, be a considerable interval between each turning-point, and as there can generally be only one turning point on an aerodrome the spectators have a long time to wait before the machines come round on each lap. Moreover, in handicap races it is seldom that any considerable bunching-up occurs until near the end.



(Left) Cooling themselves synthetically in the shade of a "Leopard Moth" are (left to right), Miss Fontes, sister of Luis Fontes of motoring fame, who was second in the Grosvenor Trophy Race, Mrs. Macdonald, Mrs. Battye, Mrs. Paterson, Mr. Roy Harben and Mr. Harold Perrin, Secretary of the Royal Aero Club, who appears to be blowing on his ice, presumably to raise its temperature before eating it. (Right) Her Grace the Duchess of Bedford, winner of the arrival competition (in dark glasses), talking to Mrs. Shelmerdine, wife of the Director General of Civil Aviation. (Flight photographs.)

so that "thrills" during the race are few and far between. On Saturday, however, there were several exciting moments during the first lap, when the machines were piloted around the acute angled corner over the aerodrome, as on occasions they overtook each other at this corner.

GROSVENOR CHALLENGE TROPHY RACE PLACINGS

Registration	Pilot	Aircraft	Start.	Finish.	Speed.	Place.
			m. s.	m. s.	m.p.h.	
G-AGMZ	Captain the Hon. R. Grosvenor	"Swallow" (Pobjoy)	0 00	24 52	99	8
G-AALG	G. A. McPhee	"Moth" ("Gipsy I")	0 14	24 21	102	5
G-ACBX	Lt. Comdr. C. W. Phillips	"Moth" ("Gipsy III")	1 08	23 37	109 $\frac{1}{4}$	1
G-ACJF	G. S. Davison	Monospar S.T.25 (2 Pobjoy)	2 44	23 13	109 $\frac{1}{4}$	10
G-AAVT	C. S. Napier	Hendy 302 ("Hermes IV")	3 29	24 07	132	3
G-ABIX	A. Henshaw	"Active" ("Hermes IIb")	5 46	24 41	130	6
G-ADES	Lord Willoughby de Broke	"Eagle" ("Gipsy Major")	5 46	24 43	129 $\frac{1}{2}$	7
G-ACWV	Lady Blanche Douglas	"Hawk Major" ("Gipsy Major")	6 33	25 45	128	11
G-ADFA	C. E. Gardner	"Gull" ("Gipsy VI")	8 33	24 57	150	9
G-ADGP	Luis Fontes	"Hawk" ("Gipsy VI")	9 30	24 02	171	2
G-ACTE	W. Humble	"Hawk" ("Gipsy VI")	9 39	24 20	167 $\frac{1}{2}$	4

Perhaps the most interesting part of the race was to study the different methods of cornering adopted by the pilots of various classes of machines, and it was obvious that some of the less experienced pilots of fast machines do not yet realise that thrwing a machine around a corner by banking it very steeply and pulling round hard is a sure way of dropping a great deal of speed. Mr. C. S. Napier, who has probably had as much experience as anybody in the race, showed how it ought to be done, and he undoubtedly lost far less on his corners than anyone else. He approached just the right amount outside the corner and took it with a steady turn, banking to about 30 deg., a very different performance from that of some of the other pilots who banked nearly vertically and then came out in a diving swoop, which required a great deal of elevator and top rudder to control. The actual finish, as the table shows, was rather a run-away for a local machine, the property of Mr. W. Lindsay Everard, and flown by Lt. Cdr. C. W. Phillips, R.N., who is Mr. Everard's private pilot.

After the race was over Capt. E. W. Percival demonstrated his "Gull," in which he recently flew to Africa and back in one day, and then, following him, and before the prizes were distributed by Sir Philip Cunliffe-Lister, a flight of No. 605 County of Warwick (Bomber) Squadron of the Auxiliary Air Force from Castle Bromwich, Birmingham, flew over in formation in their Hawker "Harts." The efficiency of the pilots of our Auxiliary Air Force is known by everyone to be excellent.

and we are well accustomed to seeing perfect flying from them, but never have we seen such a display as this flight gave on Saturday. Their station-keeping, even during very tight turns, was as good as anything we have ever seen, whether it be the Royal Air Force or the Auxiliary Air Force.

Thus concluded the opening display of our twenty-second municipal airport. In the evening Mr. Lindsay Everard, that hard-working sponsor of so much aviation progress, held a dinner, to which he invited all the visiting pilots and their friends; the usual aviation "party" followed and was enjoyed in the usual satisfactory aviation manner. Those many people like Mr. J. Jeffs, Major Alan Goodfellow and Messrs. Harry Purt, S. Brown and R. C. Winn (to mention but a few), who had shouldered the hard work which made the occasion so successful, were to be seen relaxing in that energetic manner which is typically English and far more effective than it appears at first sight.

The Lowe-Wylde Fund

THE second list of donations to the Lowe-Wylde Memorial Fund (the objects of which were set out in *Flight* last week) is as follows:—

		f	s	d
W. S. Stephenson	...	10	10	0
H. Scott-Paine	...	10	10	0
J. M. Ferguson	...	10	10	0
H. O. Short	...	5	5	0
Whitney Straight	...	5	5	0
Dr. A. P. Thurston	...	5	5	0
F. J. Connolly	...	5	5	0
Sir Maurice Bonham Carter	...	5	0	0
Major H. A. Petre	...	5	0	0
Wolseley Motors, Ltd.	...	5	0	0
R. P. G. Denman	...	2	2	0
C. F. Lumb	...	2	2	0
S. B. Wilkes	...	2	2	0
Sqn.-Ldr. T. H. England	...	2	2	0
F. S. Moller	...	2	2	0
A. H. R. Fedden	...	1	1	0
Ian C. Maxwell	...	1	1	0
H. Seaward	...	1	1	0
M. H. Volk	...	1	1	0
Laurence A. Wingfield	...	1	1	0
J. Kidston Allsop	...	10	6	

Donations should be sent to Mr. E. C. Gordon England at the London Air Park, Feltham, Middlesex.

Brighton Developments

MR. M. H. VOLK, who has been connected with aviation for a great number of years, and who has been largely responsible for the establishment of the Brighton, Hove and Worthing Municipal Airport at Shoreham, has been appointed aeronautical adviser to the three boroughs responsible for that aerodrome. He is also acting as consultant to Mr. Stavers H. Tiltman, architect and surveyor to the airport. Mr. Volk and Mr. Tiltman have now entered into a partnership as airport designers and consultants, with an office at 42, Middle Street, Brighton, 1.

Correspondence

The Editor does not hold himself responsible for the opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for publication in these columns.

LOW WING v. THE REST.

[3055] I wonder if your correspondent "Private Owner" (page 46, *Flight*, July 11) can tell us of an actual "nose-over" on a low-wing monoplane; and, if so, has this caused damage to the occupants? Does he know that the chance of "nosing over" is considerably less on a low-wing monoplane than any other type, due to the low centre of gravity? Is he aware that at least one of the most modern of the high-wing monoplanes of to-day fit fuel pumps as standard and not gravity feed as he suggests? Fitting a wing on top of a cabin for the purpose of protecting the pilot from the sun seems to be a poor compromise and surely cannot be a serious suggestion? Curtains of a suitable material fitted inside the roof, are sometimes used for this purpose.

The contradictory nature of your correspondent's letter does not seem to prove his point. E. W. PERCIVAL.

London, S.W.1.

THE LIFE OF COMMERCIAL AEROPLANES.

[3056] Your correspondent, Mr. Eichholtz, has come into the field over the Imperial Airways-K.L.M. controversy, and again the cruising speed of the Douglas D.C.2 is a point of contention.

I quoted the American official figure of an operational speed of 165 m.p.h.; from what authority your correspondent gets 185 m.p.h. I don't know, but possibly through the same channels as your previous correspondent who cruised at 280 m.p.h. It is difficult to know from what source to obtain information if one cannot rely on official Government statistics, and this figure of 165 m.p.h. seems fairly substantiated by the recent performance of the T.W.A. Douglas which broke the world record for "5,000 kilometres without load," at 169.03 m.p.h.

But more serious is the revelation that K.L.M. intend to replace their fleet of Douglases after two years. This means that, if we take a year's work at what seems a reasonable figure of 1,500 hours per annum, the cost of the aircraft must be written off over 3,000 hours' flying, as compared with about 7,000 hours of Imperial Airways' aircraft, the active life of which seems to be between four and five years. It is well enough known that one of the main reasons why air transport requires subsidy is because development of successive types of aircraft is so fast that to-day it becomes uneconomic to operate a specific type after it is more than four or five years old. The severe effect of this problem on an air traffic company's balance sheet can more easily be seen when it is realised that other transporters, such as shipping and railway interests, write off vessels and rolling stock over periods of thirty to forty years.

If, then, it be true that the K.L.M. intend to replace their "main line" Douglas aircraft after two years, it can only mean either that they are dissatisfied with their new equipment or that they are taking what is obviously a retrograde step by pursuing an uneconomic policy which will put further and unnecessary subsidy burdens on the Dutch tax-payer.

London, S.W.3.

K. GRANT.

MODEL AERODYNAMICS

[3057] In your issue of July 11 you mention in the Models Section on page 65 that the duration competition at the Northern Heights Model Flying Club's Gala day was the most popular of all, but that "nobody seems to know why."

I would take the liberty of trying to explain that duration in a model aeroplane on any sort of day is a measure of its efficiency and also measure of its builder's ingenuity in structural and aerodynamic design; besides being the one and only type of competition which can be run successfully.

Now, I would also like to try to explain the aforementioned points. If a model aeroplane is capable of doing good duration on a bad day, it is evident that it is flying on the minimum of power—this is the aim of all designers of efficient aircraft. If a model aeroplane is capable of soaring away on a good day it is again fairly evident that the design is aerodynamically good on the score of L/D and low sinking speed, besides stability and climb which take the model to a height at which soaring currents are found—which is seldom below 100ft. above a level grass covered surface.

The evidence about structural ingenuity is simply that to



The remains of Sir Alan Cobham's historic D.H. 50 (see letter below from Mr. P. Donegan).

get a good model the loading must be low and the power carried on a structure which does not flex unduly under load, besides such endeavour as is possible in the way of reduction of resistance and the application of good, sound principles in stability, which are rather difficult to apply, due to the distributed motive power weight.

The aerodynamics of model aeroplanes, or, rather, the advance in this direction has been entirely developed due to the duration competition, as in this type of competition a model flies long enough to be observed, and a diagnosis of its failings is only possible by observation of the different attitudes it takes up during the different conditions of free flight.

Competition for speed, climb, distance, height, seaplanes, power-driven models, etc., have all been run very often and with some success, but unfortunately none of these is as attractive as the normal duration competition, there being many difficulties in measuring the results. The S.M.A.E. has applied itself diligently in endeavouring to produce suitable rules for new competitions, but almost all competitions other than duration appear to frighten the young and bamboozle the average person.

I am glad you raised this point about the duration competition, and I hope this may shed some light on its advantages.

RALPH N. TULLOCK,

London, S.E.12. Hon. Technical Secretary, Society of Model Aeronautical Engineers.

LAST RESTING PLACE

[3058] The enclosed photograph [reproduced on this page.—ED.], which may interest *Flight* readers, is of the remains of an historic D.H.50.

It was in this machine that Sir Alan Cobham flew from London to Melbourne, and London to Capetown, these flights being recorded on the sides of the fuselage.

About six years ago it was purchased by West Australian Airways, and fitted with a "Nimbus" engine in place of the "Jaguar."

Pilot Heath flew into fifth place in the West Australian Centenary Sydney to Perth Air Race with this bus after a series of mishaps on the way.

From then on, till it was forced down in heavy scrub on a sheep station, it was in continuous service on the Nor'-west Mail Route. The remains now lie behind the hangar on the Carnarvon Aerodrome.

It will be remembered that Mechanic Bob Elliot was struck by a stray Arab bullet and lost his life while on one of Sir Alan's early trips in this machine.

In conclusion, I must add that the interesting and informative articles appearing in *Flight* are much appreciated in this part of the world.

P. DONEGAN,

Ground Engineer,

MacRobertson-Miller Aviation Co.

Carnarvon, Western Australia.

THE KING REVIEWS the FLEET AIR ARM

A Fine Climax to His Majesty's Inspection of His Navy

AS part of the great Naval Review at Spithead last Tuesday, His Majesty the King witnessed a fly-past by one hundred and fourteen aircraft of the Fleet Air Arm. In close formation, the machines, with Sir Alexander Ramsey, Rear Admiral Commanding Aircraft Carriers, flying in the lead, flew between the lines at an altitude of 1,500 ft. and made a dive in salute to 500 ft. when abreast of the Royal Yacht, the Victoria and Albert, anchored at the head of the lines. Perfect weather favoured the occasion, a heat haze which had been lying over Spithead clearing conveniently at 3 p.m.; the fly-past took place at 5.30.

The aircraft taking part were Nos. 810 and 811 Fleet Torpedo-Bomber Squadrons ("Baffins"); 821 ("Seals"); 822 (III F's) and 823 ("Seals") Fleet Spotter-Reconnaissance

Squadrons; 820 ("Sharks") Fleet Torpedo-Spotter-Reconnaissance Squadron; 800, 801 and 802 ("Nimrods" and "Ospreys") Fleet Fighter Squadrons; 444 (III F's) Fleet Spotter-Reconnaissance Flight; 407 and 447 ("Ospreys") Fleet Fighter-Reconnaissance Flights; and one "Seagull" amphibian from H.M.S. Nelson.

The aircraft approached from the west with half a mile between the individual squadrons and one mile between each group.

After the salute the seaplanes attached to catapult-equipped ships landed alongside their parent craft for hoisting-in.

The formation-flying and station-keeping were outstanding as they always are in the F.A.A., and the whole fly-past was carried through in that efficient manner which we expect from the Senior Service.

KING'S CUP ENTRIES

Thirty-three in the List Up To Last Tuesday Morning

A STUDY of the latest list of entries for the King's Cup Air Race (the final closing time is 5 p.m. on July 30) brings to light one or two interesting facts. On the whole the machines are well-known types, most of which have already been seen in races. There is, however, a new De Havilland—the King's Cup Race would hardly be correct and proper without a new machine from this factory—the D.H.90. This is a four-five-seater biplane with two "Gipsy Major" engines. At the present time it is purely experimental, and the manufacturers are not yet prepared to deal with any enquiries concerning it. Presumably lessons learnt from their latest machines, such as the "Dragon Six" and "Comet," will be incorporated, so the "90" should be worth waiting for.

The B.A. "Cupid" is another entirely new machine. This will be a two-seater side-by-side low-wing monoplane with a comfortable cabin. The engine will be a "Gipsy Major." The undercarriage will not be retractable, but otherwise the machine will in many respects resemble the well-known "Eagle," a type of which there are two in the race. Phillips and Powis machines predominate the list, there being no fewer than twelve Miles "Hawks" or "Falcons" among the present thirty-three entries.

The D.H. Technical School will be racing its T.K.2, which has been entered by Lord Wakefield. This is virtually a new D.H. machine, although, actually, of course, entirely designed and built by the staff and students of the school. It is a two-seater cabin low-wing monoplane with a "Gipsy Major" engine, and is expected to have a high performance.

Repairs at Portsmouth

A IRSPEED (1934), LTD., announce that their service station at Portsmouth is now under new management and able to undertake C. of A. renewals and all forms of aircraft repairs. Communications should be addressed to the Service Manager, Airspeed (1934), Ltd., The Airport, Portsmouth.

Aircraft Components, Ltd. Expand

THE popularity of the products of Aircraft Components, Ltd., of which company Mr. George H. Dowty is managing director, and which specialises in the manufacture of shock-absorber struts and undercarriage equipment, has become such that the firm has selected a site for a new and enlarged factory. Arle Court Estate, Cheltenham, which consists of a mansion and 56 acres of land, has been acquired, and the erection and equipment of the factory will begin almost immediately.

Concurrent with this news comes the announcement that

THE ENTRIES UP TO JULY 16

ENTRANT.	AIRCRAFT.
Maj. G. W. Graham Allen	"Hawk Trainer."
J. M. Barbour, Jr.	"Leopard Moth."
Mrs. E. Battye	"Hawk Major."
J. Fox	"Eagle."
C. Best	"B.A. Cupid."
A. H. Cook	"Hawk de Luxe."
R. Cornwall and W. Verrells	"Hawk Trainer."
Capt. G. de Havilland	D.H.90.
S. Harris	"Falcon."
S. L. Turner	"Gull."
L. Fontes	"Hawk."
E. L. Gander-Dower	"Eagle."
Capt. W. L. Hope	"Swift."
Miss R. Slow	"Hawk Mk. II."
Lord Wakefield	T.K.2.
Viscountess Wakefield	"Falcon."
Sir John Kirwan	"Heck."
P. Mursell	"Gull."
Sir Charles Rose	"Courier."
W. R. Portier	"Gull."
F. G. Miles	"Hawk Mk. V."
F. B. Worman	"Streak."
A. C. W. Norman	"Hawk Major."
H.R.H. the Duke of Kent	"Mew Gull."
Diana Williams	"Gull."
E. W. Percival	"Gull."
S. A. Sadler	"Hawk de Luxe."
W. Humble	"Hawk."
Sir D. Hall-Caine	"Leopard Moth."
C. Nicholson	"Comet."
C. J. Melrose	"Gull."
A. Henshaw	"Active."
R. O. Shuttleworth	"Swift."

Mr. R. H. Bound, who has been engaged on aircraft design for nineteen years with a number of firms, including A. V. Roe and Co., Ltd., and the Percival Aircraft Co., has been appointed chief engineer. Mr. A. V. Piper, who for the last eighteen years has been with Handley-Page, Ltd., the Gloster Aircraft Co., and the Parnall Company, is now in charge of design.

The secretary of the company is Mrs. Dowty. Mr. J. R. Dexter is in charge of the works and Mr. A. Harris is chief inspector.

Rand Airport Opening

THERE is still time for the enthusiastic private owner to reach Germiston for the opening of the new air station at the Rand Airport on August 5. His Excellency the Governor-General, the Earl of Clarendon, is performing the ceremony, and there will be an arrival competition with a zero hour at noon on the previous day. All entrants will be the guests of the airport during the week-end.

THE ROYAL AIR FORCE



SERVICE NOTES AND NEWS

AIR MINISTRY ANNOUNCEMENTS

MOVE OF No. 2 (ARMY CO-OPERATION) SQUADRON

No. 2 (Army Co-operation) Squadron will move from Manston to Hawkinge. The move is to be completed by December 2, 1935.

FORMATION OF STATION HEADQUARTERS, HAWKINGE

A station headquarters will form at Hawkinge on November 4, 1935, on which date the station will be transferred from the command of the Air Officer Commanding-in-Chief, Air Defence of Great Britain (Fighting Area), to that of the Air Officer Commanding, Inland Area, and will be placed in No. 22 Group.

FORMATION OF STATION HEADQUARTERS, NORTH COATES FITTIES

A station headquarters will form, with effect from October 1, 1935, at North Coates Fitties to administer the following:—Air Observers' School, No. 2 Armament Training Camp, Donna Nook Range, and Theddlethorpe Range.

RECRUITING DEPOTS

The following recruiting depots have now been added to the list previously published:—Leeds, 14, Basinghall Street; Manchester, 11, Peter Street, Deansgate; Newcastle, 153-155, Pilgrim Street; Cardiff, Dominion House, Queen Street.

SCHOOL OF TECHNICAL TRAINING (MEN) MANSTON

The School of Technical Training (Men) at Manston has been renamed No. 3 School of Technical Training (Men) with effect from July 1, 1935.

ANTI-AIRCRAFT CO-OPERATION FLIGHT

All correspondence for the Anti-Aircraft Co-operation Flight is to be addressed as follows until August 31, 1935:—The Officer Commanding, Anti-Aircraft Co-operation Flight, Royal Air Force, Weston Zoyland, Bridgwater, Somerset.

R.A.F. STAFF COLLEGE

The following officers have been selected for the 14th course at the R.A.F. Staff College, beginning January, 1936:—Sqn. Ldr. W. E. G. Mann, D.F.C., Flt. Lts. W. J. M. Akerman, N. S. Allison, D. F. W. Atcherley, L. K. Barnes, M.B.E., H. F. V. Battle, D. A. Boyle, N. Carter, G. P. Chamberlain, F. E. R. Dixon, M.C. (Stores Branch), E. C. T. Edwards, A. D. Gillmore, S. H. Hardy, H. A. Haines, D.F.C., F. F. Inglis, H. W. Pearson-Rogers, C. B. R. Pelly, M.C., H. J. G. E. Proud, M. S. Shapcott (Stores Branch), H. D. Spreckley, J. F. Titmas, J. H. C. Wake, C. W. Weedon, A. H. Willetts. Officers who qualified at the 1935 examination, but have not been selected for the 1936 course, will be considered for the 1937 course.

MOVE OF CENTRAL FLYING SCHOOL FROM WITTERING TO UPAVON

The Central Flying School will move from Wittering to Upavon. The move is to be completed in time for the new term to commence on September 16, 1935. An advanced party of the Central Flying School will proceed to Upavon about August 1, 1935, and the aircraft will be transferred during August, 1935. The Fleet Air Arm squadrons based on Upavon will be transferred to Gosport on September 1, pending embarkation about September 9, 1935. Upavon station will be transferred for all purposes from the command of the A.O.C., Coastal Area, to that of the A.O.C., Inland Area, and placed in No. 23 Group on the completion of the taking over of the station by the advanced party from the Central Flying School. When the station is so transferred the A.O.C., Coastal Area, will communicate direct with the Fleet Air Arm squadrons, through Station Headquarters, Upavon, until they move to Gosport on September 1, 1935. On the completion of the move of the Central Flying School, Wittering station will be reduced to a care-and-maintenance basis, the personnel of which will be merged into the establishment of No. 11 Flying Training School on its formation on October 1, 1935.

FLEET AIR ARM FLOATPLANE BASE

The move of the Fleet Air Arm base for catapult floatplanes of the Home Fleet from Lee-on-the-Solent to Mount Batten was completed on June 7, 1935.

MOVE OF No. 1 AIRCRAFT STORAGE UNIT FROM PETERBOROUGH TO WADDINGTON

No. 1 Aircraft Storage Unit will begin to move from Peterborough to Waddington on December 2, 1935.

The aircraft storage section at Hawkinge will begin to move to Waddington on December 2, 1935, and will merge into No. 1 Aircraft Storage Unit.

The aircraft storage portion of the Royal Air Force Storage Section, Kenley, will begin to move to Waddington on December 2, 1935, and will merge into No. 1 Aircraft Storage Unit.

FORMATION OF R.A.F. HEADQUARTERS, EASTLEIGH

Accommodation will be available at the Southampton Air Port, Eastleigh, Hampshire, for four Fleet Air Arm squadrons as from October 1, 1935. Station headquarters, Upavon, will cease to exist when the Fleet Air Arm units now at Upavon move to Gosport on September 1, 1935. Station headquarters, on closing down at Upavon, will re-form at Gosport (on the same date) as "R.A.F. Headquarters, Eastleigh," pending accommodation being available at Eastleigh on October 1, 1935. R.A.F. Headquarters, Eastleigh, will come under the command of the A.O.C., Coastal Area. (i) Postal address:—Royal Air Force, Southampton Air Port, Eastleigh, Hants. (ii) Telegraphic address:—Aeronautics, Eastleigh."

FORMATION OF NEW FLYING TRAINING SCHOOLS

No. 7 Flying Training School will begin to form at Peterborough on December 2, 1935. The first course will commence on January 6, 1936. The unit will be placed under the Air Officer Commanding, Inland Area, in No. 23 Group, with effect from December 2, 1935. The R.A.F. Station, Peterborough, will be administered by No. 23 Group with effect from December 2, 1935.

No. 8 Flying Training School will begin to form at Montrose on January 1, 1936. The first course will commence on February 3, 1936. The unit will be placed under the Air Officer Commanding, Inland Area, in No. 23 Group, with effect from January 1, 1936.

No. 9 Flying Training School will begin to form at Thornaby on March 2, 1936. The first course will commence on April 6, 1936. The station will be transferred from the command of the Air Officer Commanding-in-Chief, Air Defence of Great Britain (No. 1 Air Defence Group), to that of the Air Officer Commanding, Inland Area, and will be placed in No. 23 Group with effect from March 2, 1936. No. 608 (North Riding) (Bomber) Squadron will remain at Thornaby in No. 1 Air Defence Group.

No. 10 Flying Training School will begin to form at Ternhill on January 1, 1936. The first course will commence on February 3, 1936. The unit will be placed under the Air Officer Commanding, Inland Area, in No. 23 Group, with effect from January 1, 1936.

No. 11 Flying Training School will begin to form at Wittering on October 1, 1935. The first course will commence on November 4, 1935. The unit will be placed under the Air Officer Commanding, Inland Area, in No. 23 Group, with effect from October 1, 1935.

CIVILIAN INSTRUCTORS REQUIRED

Owing to the expansion of the Royal Air Force, and the consequent expansion of the various trades training schools, a large number of tradesmen are required for service in a civilian capacity for instruction work in fitting, metal rigging, armament and wireless. They will be employed at the appropriate schools of instruction. These appointments will be made over the period of the next twelve months, a number being required immediately.

Applications are accordingly invited immediately with a view to appointment as civilian instructors in the undermentioned categories. They should be addressed to the Commanding Officer, R.A.F. Reception Depot, West Drayton, Middlesex, who will furnish full particulars and arrange for the necessary trade test at West Drayton before appointment.

The special trade instructors required and the necessary qualifications in each case are as follows:—

Fitters.—Must be capable of lecturing and demonstrating the theory of the internal combustion engine and undertaking instruction in dismantling and erecting engines. Use of precision tools is necessary.

Metal Riggers.—Must be capable of lecturing and demonstrating the working of light metal tubes and plates as used in airframe construction. Knowledge of rigging airframes is an advantage.

Armament.—Must be capable of lecturing and demonstrating machine guns, small arms, small arms ammunition and explosives, and have a knowledge of the upkeep of small arms.

Wireless.—Instructors in the three undermentioned categories will be required: (1) Capable of lecturing and instructing in applied radio and the electrical theory of the apparatus used. (2) Capable of demonstrating in a radio and electrical laboratory. (3) Instrument makers or light fitter turners fully capable of working in light metal. Must be familiar with precision tools. The commencing rate of pay for a Grade 3 Instructor is £4 a week inclusive, which may be increased to £4 5s. after a short period of satisfactory service. Grade 1 and 2 Instructors are also employed (rates of pay £5 and £4 10s. a week respectively), these posts being filled by promotion from Grade 3. In addition, instructors in Morse capable of working at 25 words a minute, semaphore 15 words a minute, and lamps 12 words a minute, are also required. The rate of pay for this type of post is £3 10s. a week inclusive and the appointment will be restricted to ex-airmen wireless operators.

HALF-YEARLY PROMOTIONS

The following additional list of half-yearly promotions was held over last week owing to lack of space:—

Squadron Leaders to be Wing Commanders.—E. C. Emmett, M.C., D.F.C.; H. A. Smith, M.C.; C. L. King, M.C., D.F.C.; C. R. Carr, D.F.C., A.F.C.; R. W. Chappell, M.C. (Acting Wing Commander); A. H. Wann; T. W. Elmhirst, A.F.C.; H. S. Kerby, D.S.C., A.F.C.; W. Helinore; J. A. Sadler; A. G. Bishop, O.B.E., A.F.C.; L. H. Cockey; J. W. B. Grigson, D.S.O., D.F.C.; L. O. Brown, D.S.C., A.F.C.; W. Underhill, D.S.C.; W. A. C. Morgan, M.C.; R. E. G. Fulljames, M.C.; C. Turner, A.F.C.; E. S. Goodwin, A.F.C.; R. V. Goddard; F. W. Walker, D.S.C., A.F.C.; D. Colyer, D.F.C. (Acting Wing Commander); F. H. Laurence, M.C.; E. A. Fawcett; F. O. Soden, D.F.C.

Flight Lieutenants to be Squadron Leaders.—G. T. H. Pack; C. A. B. B. Wilcock, A.F.C.; K. A. Meek, M.B.E.; J. B. Heath (Lieutenant Commander, R.N.); A. M. Rundle (Lieutenant Com-

mander, R.N.); C. W. Byas (Lieutenant Commander, R.N.); G. C. Dickins (Lieutenant Commander, R.N.).

Flying Officers to be Flight Lieutenants.—J. A. D. Wroughton (Lieutenant, R.N.); W. G. C. Stokes (Lieutenant, R.N.); G. B. S. Slater (Lieutenant, R.N.); W. H. G. Saunt (Lieutenant, R.N.); J. de F. Jago (Lieutenant, R.N.); G. N. Torry (Lieutenant, R.N.); D. C. V. Pelly (Lieutenant, R.N.); J. C. Cockburn (Lieutenant, R.N.).

STORES BRANCH

Squadron Leader to be Wing Commander.—W. J. King, D.C.M.

ACCOUNTANT BRANCH

Wing Commander to be Group Captain.—C. G. Murray, O.B.E. **Squadron Leader to be Wing Commander.**—R. Whyte.

MEDICAL BRANCH

Group Captain to be Air Commodore.—W. Tyrrell, D.S.O., M.C., M.B., B.Ch., D.P.H.

Wing Commanders to be Group Captains.—D'A. Power, M.C., M.R.C.S., L.R.C.P.; K. Biggs, M.C., M.R.C.S., L.R.C.P., D.P.H.; E. W. Craig, M.C., M.B., B.Ch.

Squadron Leaders to be Wing Commanders.—V. R. Smith, M.R.C.S., L.R.C.P.; P. C. Livingston, F.R.C.S.(E.), L.R.C.P., D.P.H., D.O.M.S.; C. P. Barber, L.M.S.S.A.; A. Briscoe, M.B., B.Ch.; C. T. O'Neill, O.B.E., M.B., B.Ch.; J. K. R. Landells, M.B., F.R.C.S.(E.), E. D. D. Dickson, M.B., F.R.C.S.(E.), D.L.O.

DENTAL BRANCH

Squadron Leader to be Wing Commander.—L. Somerville-Woodiwis, L.D.S.

AIR FORCE LIST

The July issue of the *Air Force List* has now been published. It can be purchased (price 2s. 6d.) from H.M. Stationery Office at the following addresses: Adastral House, Kingsway, London, W.C.2; 120, George Street, Edinburgh; 2, York Street, Manchester; 1, St. Andrew's Crescent, Cardiff; 15, Donegall Square, Belfast; or through any bookseller.

ROYAL AIR FORCE GAZETTE

London Gazette, July 9, 1935

General Duties Branch

The following Flying Officers are promoted to rank of Flight Lieutenant (June 14): G. R. A. Elsmie, R. L. Wallace, W. N. McKechnie, E.G.M., G. F. W. Heycock, L. W. C. Bower. The following Pilot Officers are promoted to rank of Flying Officer (June 16): J. D. Neilson, L. B. B. King, G. F. L. Scott, E. C. Harding, P. H. A. Butler, A. E. Cairnes, D. P. Barclay. Flt. Lt. W. S. Allen is placed on retired list (own request) (July 1). Wing Cdr. V. Gaskell-Blackburn, D.S.C., A.F.C., is placed on half pay list scale A (June 26). Lt. H. L. Hayes, R.N., Flying Officer, R.A.F., relinquishes temporary commission on return to Naval duty, Oct. 30, 1933 (correction). The short service commission of Acting P/O. C. F. Scott is terminated on cessation of duty (July 4).

Accountant Branch

The following are granted permanent commissions as Pilot Officers on probation, with effect and seniority (June 12) (correction): F. H. Shutt, H. C. Fleming, R. O. Heath. F/O. R. Trippett is promoted to rank as Flight Lieutenant (June 11).

Dental Branch

Flt. Lt. F. B. Sumerling, B.D.Sc., is transferred to Reserve, class D (July 9).

Memorandum

The permission granted to 2nd Lt. C. F. Whalley to retain rank is withdrawn on conviction by a civil power (Dec. 16, 1933).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Air Commodore.—A. W. Bigsworth, C.M.G., D.S.O., A.F.C., to Dept. of Air Member for Supply and Organisation, Air Ministry, 24.6.35.

Wing Commander.—C. C. Miles, M.C., to R.A.F. Station, Hendon, 26.6.35; to Command.

Squadron Leader.—J. A. Sadler, to R.A.F. Station, Mount Batten, 7.6.35; for flying (catapult) duties.

Flight Lieutenants.—D. W. R. Ryley, to Air Armament School, Eastchurch, 1.7.35. R. S. Bruce, M.B.E., to No. 6 Flying Training School, Netheravon, 8.7.35. D. Cooke, to D. of O. Dept. of A.M.S.O., Air Ministry, 6.7.35. T. Humble, to R.A.F. Station, Gosport, 5.7.35.

Flying Officers.—F. C. de la P. Beresford-Peirse, to No. 33 (B) Squadron, Upper Heyford, 28.6.35. W. Halmshaw, to School of Naval Co-operation, Lee-on-the-Solent, 1.7.35. P. S. H. Ross, to R.A.F. Station, Mount Batten, 7.6.35. F. W. Dixon-Wright, C. J. Giles, J. Goodhart, N. A. R. Halliday, D. I. P. MacNair, to Air Armament School, Eastchurch, 1.7.35. E. F. Porter, to Air Armament School, Eastchurch, 6.7.35.

Pilot Officers.—R. L. Vivian, to No. 13 (Army Co-operation) Squadron, Old Sarum, 28.6.35. W. A. K. Igos, to No. 29 (F) Squadron, North Weald, 1.7.35.

Acting Pilot Officer.—C. W. K. Nicholls, to No. 216 (B.T.) Squadron, Heliopolis, 21.6.35.

Stores Branch

Flight Lieutenants.—R. M. Taylor, M.C., to D. of E. Dept. of A.M.S.O., Air Ministry, 5.7.35. P. V. Edwards, to No. 207 (B) Squadron, Bircham Newton, 6.7.35. J. F. Young, M.M., to R.A.F. Station, Calafrana, 5.7.35.

Accountant Branch

Squadron Leader.—H. G. Bushell, to No. 6 Flying Training School, Netheravon, 8.7.35; for Accountant duties.

Flight Lieutenant.—B. L. Blofeld, to School of Naval Co-operation, Lee-on-the-Solent, 29.6.35.

Flying Officer.—K. Fraser, to No. 502 (Ulster) (B) Squadron, Aldergrove, 29.6.35.

Medical Branch

Wing Commander.—T. C. St. C. Morton, to R.A.F. Institute of Pathology and Tropical Medicine, Halton, 5.7.35; for duty as Commanding Officer vice Grp. Capt. H. E. Whittingham, O.B.E.

Flight Lieutenants.—R. K. Muir, to No. 3 Armament Training Camp, Sutton Bridge, 29.6.35. P. H. Musgrave (Medical Quarter-master), to Headquarters, Inland Area, Stanmore, 29.6.35.

Flight Lieutenant.—O. M. Fraser, to R.A.F. Hospital, Cranwell, 3.7.35.

Dental Branch

Flying Officer.—K. G. Swiss, to Medical Training Depot, Halton, 1.7.35; on appointment to a non-permanent Commission.

AMERICANA

A Pot-pourri of News from the States : Stepping Out : Glenn's Pledge : Crashes and Recriminations

A TEST pilot's job in the United States is apparently a more risky one than in this country, and break-ups in the air are more frequent. Lee Gehlbach, of the Great Lakes Aircraft Corporation, pulled the wings off a new "torpedo-type" machine when doing a T.V. dive, but was able to get clear at 8,000ft. and land by parachute. A few weeks later he was testing out a new Grumman experimental fighter for the Navy at Dahlgren, the Navy proving ground, but was unable to get it out of a spin, so again he bailed out, this time at 12,000ft.

As a result of all this, the new spinning tunnel at Langley Field in the N.A.C.A. laboratories will be used for spinning tests before full scale tests are carried out on machines of this nature.

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CONSIDERABLE excitement seems to have been caused during the first take-off of the Sikorsky S.43. Just before taking the air one of the motors failed. Capt. Sergievsky carried on, however, and is said to have got into the air on one motor after fifteen seconds. At 200ft. the mechanic got the defective engine going again by pumping fuel up by hand.

The occasion is claimed as a record for taking a multi-engined amphibian off the water on one engine.

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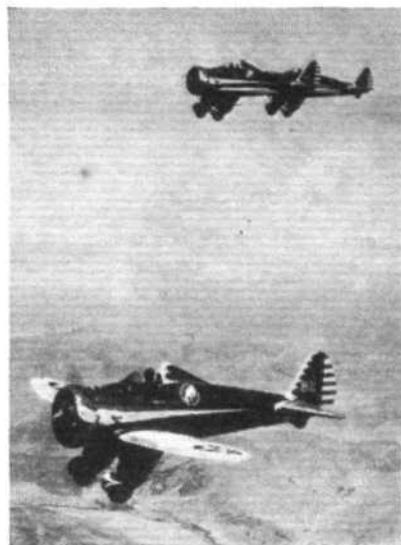
GLENN L. MARTIN, the well-known aircraft designer, has broken the pledge he signed thirteen years ago that he would not fly. He recently received news that his 78-year-old father was dying at Santa Ana, in California, so he flew to his father's deathbed, but regrettably arrived too late. It is reported that the company's officials agreed to him flying despite his pledge, which was made because they considered him so valuable to the industry.

One cannot help thinking that a pledge of this nature is a peculiar one for any business men in aviation to extract from members of a firm.

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THE T.W.A. crash in May at Kirksville, when both pilots and three passengers of a Douglas were killed, has caused considerable controversy now that the Department of Commerce has made its report on the accident. The hearings prior to the report took two weeks, and the testimonies of fifty-nine witnesses filled 907 pages. The report blames the crash on bad weather and inaccurate reporting by Government and company meteorologists. It also finds T.W.A. guilty of five "inexcusable violations" of Federal Air Line regulations, for which it may be fined the maximum of 2,500 dollars, the first such fine in the history of United States air lines.

Jack Frye, President of T.W.A., lays the blame not on T.W.A., but the Department of Commerce. He is re-



ported to have said "the real cause of the accident was that Pilot Bolton attempted to come down through a ceiling reported by the Bureau of Air Commerce observer at Kirksville as 7,000ft. What he actually found was practically a zero-zero condition. The accident occurred solely because the favourable landing conditions reported by the observer at Kirksville did not exist."

The crash occurred when the pilot, unable to land at Kansas City because of fog, was ordered to Kirksville, 128 miles away. Sixteen miles from that town, with only twenty-seven miles of fuel left, the pilot came down through the fog and, flying low over the rolling country, touched with a wing tip.

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THE second flight by a Sikorsky S.42 from the United States to Honolulu, which was made recently, was purposely delayed to await a storm forecast. The flight was, however, two minutes ahead

of schedule despite these conditions, the journey from San Francisco Bay to Pearl Harbour taking 17 hours 58 minutes. Two days were spent at the latter place before the hop of 1,323 miles to Midway Island. The flying boat was fumigated before taking off, as Midway Island has no mosquitos, and does not want any. This lap was covered in 9 hours 13 minutes flying time.

A small village has now sprung up on Sand Island, the largest of the three forming the Midway Group. Trees have been imported from Hawaii, and now twenty-three men, including a resident superintendent, a physician, five Chinese and seven Japanese of the Pacific Cables Company's Colony, which has been there for thirty-two years, have been increased to a total of fifty-seven by the Pan-American "invasion," part of which includes 2,000 tons of material (160,000 separate items). There are seven buildings, a nine-ton diesel electric power plant, kitchen, mess hall, refrigerator plant with six months' food supplies, airport manager's office, boathouse with two launches, fuel and oil storage station, machinery storehouse, radio transmitting and receiving, and compass station.

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RESULTS have been announced of the War Department's investigation of the charges against General Foulois, who, in connection with the outcry over the army's performance at flying the air mail, was accused of "dishonesty, gross misconduct, inefficiency, inaccuracy, unreliability, incompetency and mismanagement."

Instead of removing the chief of the Air Corps, as the House Military Affairs sub-committee wanted, the Secretary of War has let the General off with a reprimand to the effect that he "did depart from the ethics and standards of the Service by making exaggerated, unfair and misleading statements to a congressional committee."

SLEEVE-VALVE PROGRESS

EARLY next year deliveries will be made of both the Bristol "Aquila" and "Perseus" nine-cylinder radial sleeve-valve engines. The "Aquila" will actually be the first power plant of its type to go into series production. Already Imperial Airways have installed two "Perseus" in the Short *Syrinx* (the "Perseus" may be regarded as a larger version of the "Aquila") to determine its suitability to their requirements, and "Aquilas," which have been mounted in two machines—one civil and one military—are giving highly satisfactory service.

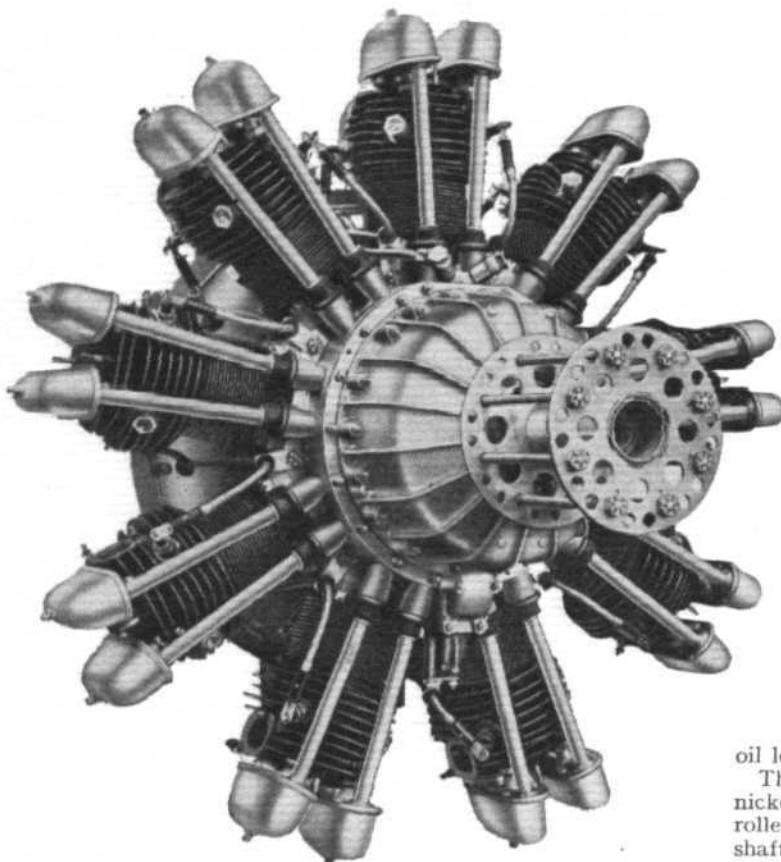
The civil-rated "Aquila" delivers a sea-level power of 500 h.p. at 2,600 r.p.m. using commercial fuel of 73 octane number, and weighs 775 lb. A continuous cruising output of 300-335 h.p. at 2,200-2,400 r.p.m. will be available according to

the installation and the type of machine concerned. It is confidently expected that the fuel consumption at economical cruising speed (300-335 h.p.) will be as low as 0.49 pint per b.h.p./hr. Oil consumption figures work out at 4.1 pints per hour.

A combined long-chord ring cowling and exhaust ring will be available, and the de Havilland controllable-pitch airscrew will be standardised.

Work on the first production series of "Perseus" engines will be started in the autumn for delivery early next year. The civil series of the "Perseus II," which uses 87-octane fuel and weighs 1,026 lb., gives, at 2,200 (normal) r.p.m., 640-665 and 740-770 at 2,525 r.p.m. For take-off 640-665 h.p. is available at 2,200 r.p.m.

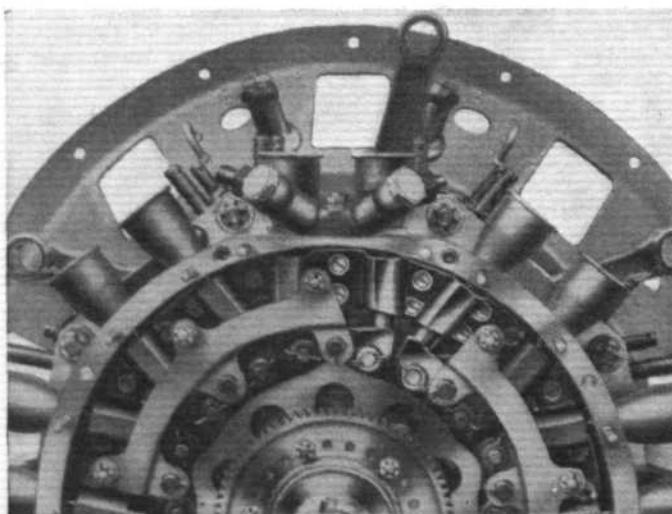
THE WOLSELEY "SCORPIO"



This three-quarter front view shows the clean external appearance of the nine-cylinder "Scorpio," which is rated at 230 b.h.p. at 2,250 r.p.m.

KOWN as the "Scorpio," a new Wolseley engine has now passed its type tests. As briefly described in *The Aircraft Engineer* of June 20, it is based on the maker's well-known 155 h.p. "Aquarius" (described in *Flight* of May 16), which is a seven-cylinder air-cooled radial; the new engine, however, is a nine-cylinder unit rated at 230 b.h.p. at 2,250 r.p.m., and embodies a number of interesting detail differences. Chief among these are first, the use of an airscrew reduction gear with a ratio of 0.629:1, and second, the employment of hydraulically operated tappets which have the important advantage that the valve clearance does not alter with engine temperature.

The cylinder capacity of the new engine is 1,053 c.c., giving a total capacity of 9,477 c.c. The bore and stroke are 111 mm. and 120 mm. respectively. The compression



A 230 h.p. Nine-cylinder Radial with a Reduction Gear and Hydraulically Operated Tappets: Many Interesting Detail Features

ratio is 5.4:1, and, as already stated, 230 b.h.p. is developed at normal r.p.m. of 2,250; the power at maximum permissible r.p.m. is 250 b.h.p. Fuel consumption at 75 per cent. maximum power is 0.545 pts./b.h.p./hr. The dry weight of the engine is 536 lb.

The crank case has well-ribbed internal diaphragms which carry the main bearings. The front half of the crank case also forms the timing gear chamber, and the diaphragm in this half carries the tappet rocker pivots. The tappet chamber is enclosed by a conical cover which carries the crankshaft front bearings.

To the rear half of the crank case is attached the induction ring, between which and the crank case lies the pressed-steel engine mounting plate. Also to the rear half of the crank case is permanently secured a plate forming one side of the induction diffuser passage. Very careful arrangements have been made to preclude oil leakage from any part of the crank case.

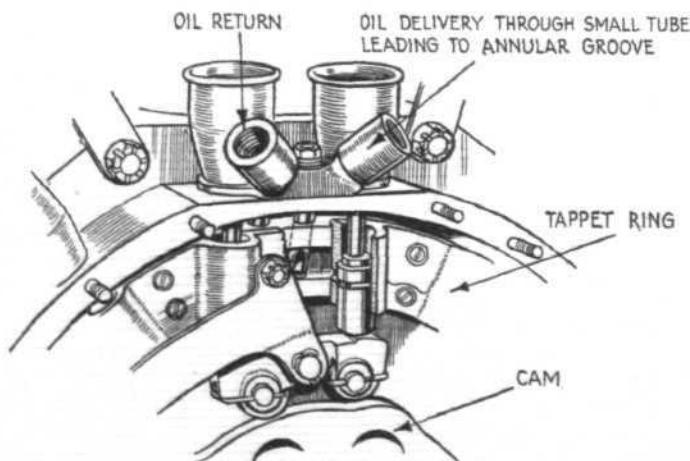
The single-throw two-piece crankshaft, a drop-forging of nickel-chrome molybdenum steel, runs in three bearings—two roller at the front and one ball at the rear. Both the crank-shaft and crankpin are drilled for lightness, and into the bores special light-oil feed plugs are fitted, in order to provide a continuous oilway of uniform section, thus preventing the possibility of sludge formation.

Each cylinder has a deep spigot, and the flange is attached to the crank case by four steel clamps held by studs screwed into the crank case from the inside and locked in position. By this means the screwed portion of the crank case is not entirely relied upon to take the tension loads, the major portion of which are taken by the heads of the studs.

The Cylinders

The cylinders are of the composite type, the barrel being produced from carbon steel forgings machined all over and having close-pitched shallow fins. The barrel is secured to a cast aluminium head by means of a shrunk and screwed joint, and to reinforce this joint a steel band carrying two fins is pressed on to the lower end of the cylinder head.

Valves of austenitic steel operate through phosphor-bronze guides, and close on special seats shrunk into the head and made of material designed to withstand corrosion by leaded fuel.



(Left) Part of the cam, with tappet rockers and tappets. The sketch above, studied in conjunction with the text, explains the hydraulic tappet operation

The valve rockers are mounted on needle roller bearings, and carry hardened steel rollers at the ends which bear on the valve stems. The valve springs are of the concentric type. The whole of the rocker gear on each head is enclosed in two pressed-aluminium covers.

Two sparking plugs per cylinder are carried in bronze adaptors, and in the induction port of each cylinder is fitted a priming nozzle.

Two pressure and two scraper rings are fitted on each piston, and the gudgeon-pins float both in the small ends and in the piston bosses, being retained by circlips.

The master connecting-rod, machined all over and of nickel-chrome molybdenum steel, is located in the No. 1 or top cylinder, and is of the solid big-end type. The auxiliary rods are attached to the master rod big-end by hardened steel wrist pins retained by set screws which draw up the taper end into the master rod.

The operation of the hydraulic valve gear is as follows: the tappet rockers, which are oscillated by the cam, lift telescopic tappets, each outer member of which is carried in a boss on a ring secured to the diaphragm of the front half of the crank case. This ring encloses an annular oil passage, from which holes communicate to a groove round each tappet.

When a cylinder valve is closed and the tappet is in its lowest position, the arrangement is such that the annular groove round the tappet just communicates with the oil-feed passage. Oil then passes through holes in the outer member of the telescopic tappet and forces out the inner member

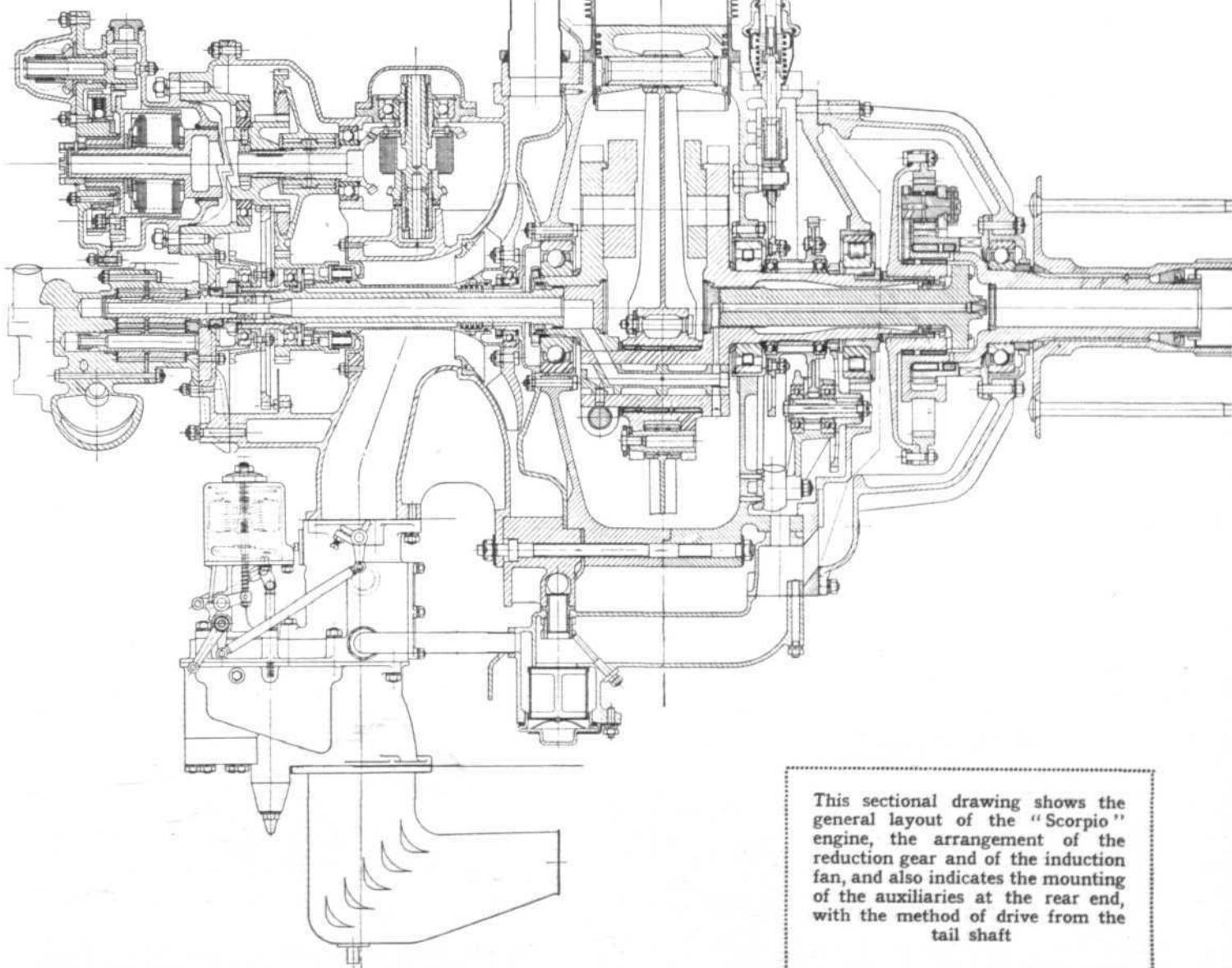
until all the clearance is taken up. As soon as that tappet begins to lift, the oil supply communication is cut off and a pad of oil is trapped between the telescopic tappets. Should any oil be squeezed from between the tappets the leakage is confined to the interior of the engine.

The inner tappet operates another tappet in a long bronze guide secured to the crank case. This in turn actuates the push-rod, which is provided with hardened steel cups at each end. These convey the motion to the valve rockers.

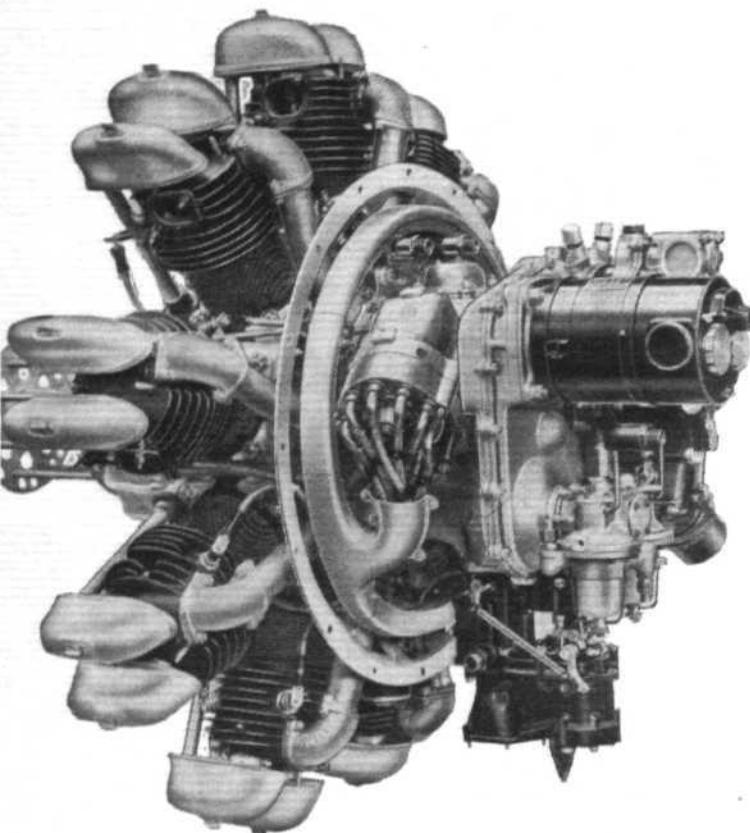
The reduction gear is of the epicyclic type and, as stated above, gives a reduction of 0.629: 1; this provides an airscrew speed of 1,403 r.p.m. at a normal engine speed of 2,250 r.p.m. The sun gear, with airscrew shaft and satellite pinions, forms in the nose-piece a complete assembly which can be detached for inspection in a few minutes. Positive lubrication of the reduction gear is provided by way of the hollow torque shaft,

the oil issuing from a jet into the chamber formed at the inner end of the airscrew shaft, directly lubricating the rear bearing of this member. Grooves and drilled holes lead oil to the centres of each satellite gear spindle, whence each floating bush of the satellite gears receives adequate lubrication.

An induction fan fed from an S.U. carburettor delivers mixture to an annular induction chamber at a slight positive pressure. The fan, which is machined all over and balanced dynamically after assembly with its driving shaft, revolves at 3.8 times engine speed, with, of course, a minimum of



This sectional drawing shows the general layout of the "Scorpio" engine, the arrangement of the reduction gear and of the induction fan, and also indicates the mounting of the auxiliaries at the rear end, with the method of drive from the tail shaft



The rear end of the "Scorpio," showing the mounting of the auxiliaries—B.T.H. magnetos, S.U. carburettor, oil pumps, generator, etc. The mounting ring and the H.T. cable conduit can also be seen

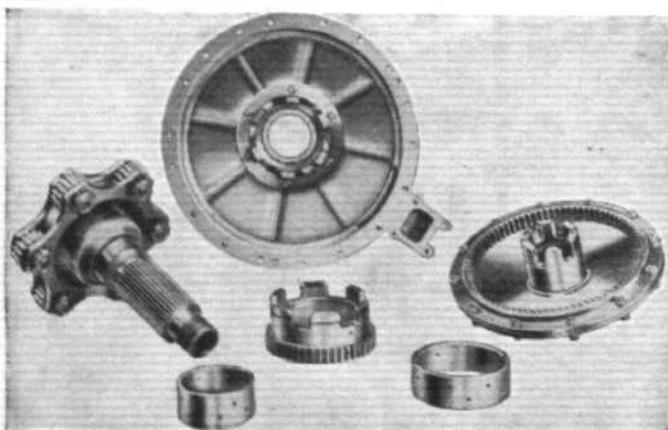
clearance between the fan blades and the sides of the fan chamber. The induction passage leading to the fan is provided with a jacket through which the warm scavenged oil is circulated. Each cylinder is fed from the annular induction chamber by radial aluminium pipes attached to the inlet ports by cast elbows. The carburettor is fitted with an automatic altitude control.

The drive for the whole of the auxiliaries at the rear of the engine is taken from the serrated bore of the maneton by means of a tail shaft made from steel of extra high resilience. Due to the length of the tail shaft a shock-absorber effect is produced, but in addition there are a slipping clutch in the fan drive and a spring coupling in the magneto drive.

The Auxiliary Drives

At the rear end of the tail shaft are mounted two spur gears, the larger driving the fan and magneto through an intermediate shaft—the starter shaft. The larger gear also drives the generator through an intermediate gear. The smaller of the gears on the tail shaft drives the air-compressor gear direct and the petrol-pump gear through a double idler intermediate gear.

The driven gear on the starter shaft is extended to engage the bronze segments of the fan-drive slipping clutch. The gear with which the bronze segments engage is mounted on needle



WOLSELEY "SCORPIO"

TYPE : Air-cooled radial.
NUMBER OF CYLINDERS : 9.
DIRECTION OF ROTATION : Right-hand tractor.
DRIVE TO AIRSCREW : Reduction gear (0.629 : 1).
BORE : 4.375in. (111 mm.).
STROKE : 4.75 (120 mm.).
COMPRESSION RATIO : 5.4 : 1.
NORMAL R.P.M. : 2,250.
MAXIMUM R.P.M. : 2,475.
NORMAL POWER : 230 h.p.
MAXIMUM POWER : 250 h.p.
FUEL CONSUMPTION at 75 per cent. max. power : 0.545 pints per b.h.p./hr. (0.31 litres per b.h.p./hr.).
OIL CONSUMPTION : 3-5 pints per hr. (1.7-2.278 litres per hr.).
DRY WEIGHT : 536 lb. (243 kg.).
SPECIFIC WEIGHT : 2.14 lb. per b.h.p. (9.6 kg. per C.V.).
OVERALL DIAMETER : 42.25in. (1,072 m.).
OVERALL LENGTH : 42.15in. (1,07 m.).

rollers on a hardened steel sleeve on the starter shaft. This clutch gear drives the gear on the rear end of the fan shaft, which is concentric with and surrounds the tail shaft.

The auxiliary drives are lubricated by a bleed from the oil jacket round the induction chamber. This bleed feeds oil to the socket in which the lower end of the vertical magneto drive shaft fits. The phosphor-bronze bush in the socket has a spiral groove which draws oil into the rear casing for lubrication of the gears and bearings. Oil is also fed up the centre of the vertical shaft directly to lubricate the spring-driven sleeve of the magneto drive bevel. The rear casing is drained by means of a pipe near the bottom of the casing directly to the sump.

Two phosphor-bronze glands running against steel faces seal the induction chamber from the rest of the engine.

The spur-gear oil pumps of the dry-sump are driven at engine speed from the rear end of the tail shaft through the medium of a universal coupling. The pressure pump delivers 2.26 gallons of oil per hour at normal r.p.m.; the scavenging pump has a capacity of 4.62 gallons per hour at this speed. The pressure pump filter chamber is provided with a relief valve which opens and by-passes the oil should the fabric filter in the system by any chance become choked. Oil is delivered at a pressure of 40-60 lb./sq. in. through the driving spindle of the pump and through the hollow tail shaft to the maneton, and thence through drilled passages in the maneton web and crankpin.

Methods of Starting

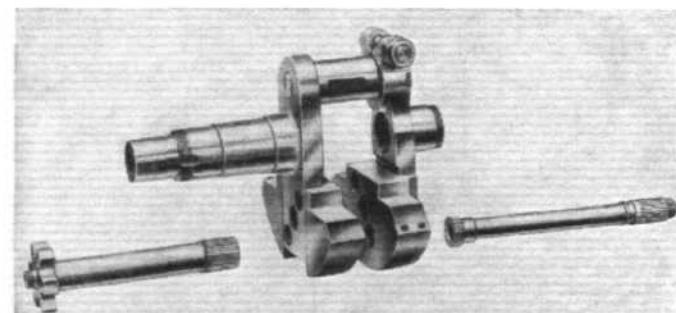
Two B.T.H. magnetos, type S.C.9, attached to the fan induction casing close to the crank case and running in an anti-clockwise direction, are driven by a bevel gear on a central vertical shaft, incorporating a clock-spring type of shock absorber.

Provision is made for the fitting of an Amal duplex diaphragm petrol pump, B.T.H. air compressor, and Rotax 500-watt generator. These components are bolted directly to the rear cover. The air-compressor drive embodies a shear pin.

At the rear of the oil pump is provided a right-angled skew gear for driving a revolution counter at one-quarter engine speed.

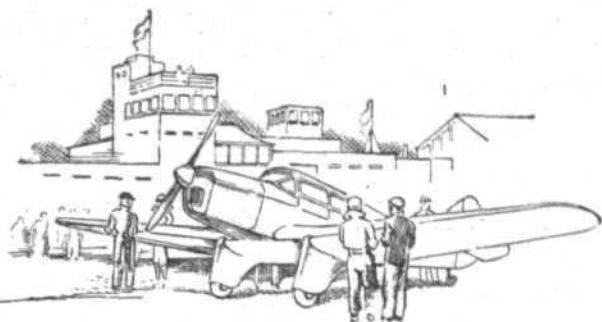
At the rear of the engine a circular flange is provided for the attachment of a Wolseley hand-turning gear, or, alternatively, an Eclipse inertia starter or a Rotax type Y.150 electric turning gear.

A Townend ring can be supplied to special order, as can a special aluminised exhaust collector ring. The general finish of bright parts of the engine is cadmium plating.



(Left) Components of the reduction gear, which provides a ratio of 0.629 : 1. Above is the crankshaft assembly.

PRIVATE FLYING



TOPICS of the DAY

Under the Hood Again

NOT so long ago I spent some thirty minutes or so "under the hood" endeavouring to remember all the things learnt two years before. At that time a stage of merely mild efficiency had been reached, and since I have used this little instrument-flying skill to take machines through cloud layers on dull days and to obtain some sunshine.

The ability to keep climbing at a fairly constant speed and to remain within five degrees of a compass course hardly satisfies a firm instructor, and I stepped out of the machine with a feeling that I had been put in my place.

It is doubtful if there is a more efficient antidote to the dangerous deception of efficiency which clouds the mind of the averagely experienced amateur. Although rather worn out at the end of half an hour's flying, I had at least required nothing more drastic than occasional verbal assistance concerning faults which I realised only too clearly.

One thing, however, is certain; the ability to fly blind safely, if inaccurately, does not leave you. All corrections may be over-corrections, but faith in the turn indicator, like one's ability to swim or to ride a bicycle, appears to remain for ever. All three accomplishments are almost entirely matters of confidence.

Instrument Psychology

THE psychology of the business is really rather peculiar. After spending half an hour in the greenish gloom and recovering, shakily enough, from two most unpleasant spins, the hood was freed with relief and "blind"—in other words, flat and consequently stable—turns were practised in the open.

With an horizon and a sight of the wings it was incredibly difficult to force oneself to make these abominable turns, and in the end I poked my head inside and again ignored everything but the instruments. While under the hood, too, my speed had varied between 75 and 85 m.p.h. on the level and between 60 and 70 m.p.h. on the climb, yet in fact there was absolutely no need to move the column when holding a steady attitude.

All pilots who are to use their instrument flying capabilities in real transport work should also, one feels, spend quite a lot of time practising in clouds. I once heard of a fairly competent instrument pilot who, after six hours' instruction, was told to push back the hood.

The instructor had allowed him to climb the machine into the clouds and now hoped that the sight of a pair of more or less opaque wing tips would inspire him with confidence. Within twenty seconds, according to the undoubtedly amplified story, the machine came out of the cloud base in a tight spiral.

Quite naturally, the fresh air and the sight of the rest of the machine had given the pupil a subconscious idea that all was well, and he started to fly by "feel"—with inevitable results.

Experience Value

OVERHAULS and specific jobs of work on light aeroplanes are done nowadays so well and so comparatively cheaply by the various service people that there is probably very little advantage in attempting any ambitious work oneself. One or two firms, also, carry a large and intelligently chosen stock of spares so that work can be put in hand almost at once.

Nevertheless, as I have already explained, the owner who keeps his machine at his own aerodrome must learn to carry out inspections and maintenance work himself, and the mechanically-minded owner can both amuse himself and save money, even if his machine is kept at a fully-equipped aerodrome.

Although it would be unfair to recommend the new and enthusiastic owner to "pump" ground engineers for useful information, there are a hundred and one tips which are only known to men with a long experience.

In certain machines, for instance, the fact that the undercarriage to airframe attachments need attention is indicated by cracks in the paint surface around the brackets. This usually shows that, in hot weather, there has been some slight shrinkage in the wood of the longeron and that the bolts must be tightened. A quarter of a turn should suffice for each.

Any experienced ground engineer could multiply such an example a hundredfold, so that the occasional expert, if cursory, examination is not wasted.

The daily or weekly inspection should, of course, always be carried out systematically. On one day, for instance, each control wire can be followed from the stick or rudder bar, through its joints and guides, to the control surface itself. Signs of fraying will then be detected in good time, the guides and so forth can be lubricated and all the locking wires can be seen to be in position.

On another day one could go over all the engine pipelines and check the tightness of each joint as well as of the drain plug and oil filter attachment bolts. In hot weather especially, the propeller attachment can be examined and the nuts tightened. All this work should be entered in the log book.

Rules and Regulations

THE other day I was forcibly reminded of the past when I opened the latest and seventh edition of *Pilot's "A" Licence* by John F. Leeming. At the time when I took my "A" licence the second edition was my mentor before facing the awkward questions about the lights displayed by free balloons at night and so on.

The new edition of the book, which is published by Sir Isaac Pitman and Sons, includes not only the various regulations in questionnaire form, but also details of the practical tests for "A" licence pilots, of the controlled areas, of display panels, of airworthiness regulations, of the various clubs, and, in fact, of most of the problems affecting the amateur pilot.

INDICATOR.

Private Flying

FROM THE CLUBS

Events and Activity at the Clubs and Schools

CAMBRIDGE

For the week ending July 12 flying time was 42.10 hr. Messrs. Nicholson and Gatty made their first solo flights and Miss Owen and Mr. Barrington passed their "A" licence tests. Nine members of the Civil Aviation Service Corps attended on Sunday and all flew. The "Puss Moth" has been kept very busy with charter trips.

LINCOLNSHIRE

Two machines took part in a "dawn patrol" to Leicester and four attended the opening of Leicester Airport, carrying members of the Club and Grimsby Corporation officials.

There are seven new pupils, Messrs. Bratley, Sproston, Greenacre, Mitchell, Forte, Ellingworth, and Lowe. First solos have been made by Messrs. Grice and Myers.

During the past fortnight 35 hr. dual and 25 hr. solo have been flown.

MIDLAND

Cross country flights have been made to Braunstone and Hucknall, and Shanklin.

Flying times for the week ending July 11 were dual 14 hr. 40 min. and solo 28 hr. 15 min.

New members include Messrs. R. Harper and C. H. Curtis, the latter being in the "ordinary" category.

Messrs. A. H. Swann and D. R. Scott made successful first solo flights, and Messrs. B. Dawkins and L. Ashforth passed their "A" licence tests.

TOLLERTON

The engineering staff has been reinforced and hopes to be able to deal with the rush of C of A's and similar work with a little more speed. An interesting member of the ground staff is T. Grave, who took his ticket in 1912. He wishes he could fly a modern machine.

It is hoped to put the engine shop in order very soon, and, doubtless, this will also be swamped with work.

Flying time totalled 40 hr. 25 min. One new flying member and one associate joined the Club and cross country flights were made to Carlisle and Newmarket race meetings by Mr. Bissill, to Heston by Mr. Partridge, and to Farnborough and Brooklands by Mr. Winser.

DUBLIN AIR FERRIES

The four machines of the Company have flown 105 hr. 20 min. in the past month, making a total of 380 hr. 50 min. since early in March.

Of the many pupils two more went solo last week. These were Mr. C. Scott and Mr. A. Berry.

A new member has joined the school, Dr. R. Warren Darley, a friend of Mr. Lowndes, the racing motorist, who is also a member.

The charter work for the month has been interesting, and has included a flight to Birmingham, one to Fermoy to inspect a slightly damaged machine that had hit a sheep, and another to Belfast to fetch a legal representative in connection with the gold-mining concessions in Wicklow.

A general meeting of the members of the school was held on Sunday, July 14, at Kildonan Aerodrome at 3 p.m., to reorganise under the new management the old Everson School, and the Iona Company and to elect officers. Matters in connection with the Summer Aviation Camp were also discussed.

Since the above was written Mr. G. C. Whiteside has also done a very excellent first solo, making a total of 16 solo members.



A CRUSADER. A close-up of the Gyro "Crusader" monoplane which was illustrated in *Flight* last week. The tail is carried on two metal booms.

BRISTOL

The winners of the two scholarships awarded by the Club for 1935 are: Mr. T. S. Jones, of 7, Oakland Road, Redland, Bristol, and Mr. A. H. Dixon, of 10, Cranleigh Gardens, Stoke Bishop, Bristol.

Messrs. G. T. Reed, P. V. Roberts, J. D. Hannington and A. H. Dixon, have become "pilot" members, and F/O. Mansfield is an ordinary member. Mr. E. A. Mayston qualified for his "A" licence during the week, and Dr. Bodman and Mr. D. A. Taylor made first solo flights.

The Club now has seventeen pupils under instruction for "A" licences and two for "B" licences.

Flying hours for the week were 47.

BROOKLANDS

Two machines took part in a "dawn patrol" to Leicester on Sunday, and the occupants of both were successful in winning a free breakfast.

Captain Findlay has delivered a machine to Aberdeen. Messrs. Smallman and Taylor-Young made successful cross-country tests to Blackpool and the North, whilst Mr. Wakefield made another long tour, this time visiting Dorset and Devonshire.

Mr. Percival arrived in the "Mew Gull" and gave a demonstration of its speed and manœuvrability.

First solos were made by the Hon. J. P. Bowes-Lyon and Mr. M. L. Davis, and Miss Knight-Bruce completed her tests for an "A" licence. New members include Capt. W. A. King (late Royal Warwickshire Regt.), who has come over from Ireland to take his "A" licence, Mrs. Berg from Morocco, Miss McKinnon from New Zealand, Mrs. Peyton from Hong Kong, Doctor and Mrs. Schabot, and Messrs. Elliott, Baker and Middleton.

HATFIELD

The London Aeroplane Club's flying time for last week was no less than 158 hr. 20 min. On Sunday, July 7, the Club's six machines flew 41 hr. 15 min., a record in the history of the Club, and, it is believed, for any Club.

New members are Mrs. A. Brodrick, Mrs. P. M. Goldsmith, and Messrs. E. P. Appleby, F. Gough, E. A. H. Fisher, R. L. Moss, and F. Holmes. Messrs. W. Harrison, G. Lenanton, G. Oliver, and D. Rae made their first solo flights.

Sqn. Ldr. C. R. Davidson, F/O. E. A. Beale and F/O. H. L. M. Glover have recently joined the Royal Air Force Flying Club.

Deliveries have been made at Hatfield of "Tiger Moths" to Brooklands Aviation, Ltd., a "Rapide" to Aberdeen Airways, who will have another one this week, and a "Leopard Moth" for the Aero Club de Suisse, which was flown back by Capt. Weber.

Mr. J. Cunliffe-Lister, son of the Secretary of State for Air, is an active member of the London Aeroplane Club, and recently purchased his own aircraft.

SOUTH STAFFS

As recorded last week the official opening of the Walsall Municipal Aerodrome and the South Staffs Aero Club took place on Saturday, July 6. The ceremony was performed by Sir William J. Talbot, J.P. After opening the aerodrome Sir William proceeded to the Club House, which he opened with a souvenir key.

An arrival competition for visitors was won by Mr. H. L. Brook in his record-breaking Miles "Falcon." Second place was gained by the Crilly Airways' "Dragon" flown by Mr. Coates. The prizes for visitors coming from the longest distance were won by Mr. K. Seth Smith ("Jubilee" Monospar) from Eastbourne, and the Misses Mabel and Sheila Glass ("Moth") from Heston.

Altogether about forty machines of various types arrived and after the opening ceremony twenty-five of these took part in a "Fly Past" led by the Crilly Airways' "Dragon," which contained Sir William Talbot and the municipal party.

The flying programme was in charge of Capt. R. H. Stocken. Demonstrations of crazy flying and aerobatics were given by Capt. Thorne (Avro "Cadet"), Mr. George Lowdell (Hawker "Tomtit") and Flt. Lt. "Tommy" Rose (Miles "Hawk Major").

Great interest was aroused when Herr Robert Kronfeld arrived from London in the B.A.C. Drone, in which, later in the day, he gave convincing exhibitions.

A "bombing the motor car" competition resulted as follows: 1st, Flt. Lt. T. Rose (Reading); 2nd, Mr. George Lowdell (Birmingham); 3rd, Capt. Thorne (Manchester).

Joy riding was carried on till dusk by Air Travel, Ltd., and Miss Pauline Gower and Miss Dorothy Spicer, in a Short "Scion," Avro 504 and Spartan. In the evening Mr. Bruce Williams did a parachute descent from Miss Gower's Spartan.

Considerable interest was shown in a demonstration of flying model aircraft by Knight's Model Air Circus.

All visitors arriving by air were entertained to tea in the Club enclosure and were presented with handbags, wallets, cigarette cases, etc., made in the town. They were welcomed on arrival by members of the Club and were made honorary members of the South Staffs Aero Club for the current year.

LANCASTER, MORECAMBE AND DISTRICT

Since its inception the Club has put in 40 hr. flying and eight members should soon qualify for their "A" licences.

YORKSHIRE

Club aircraft flew 72 hr. 40 min. last week, and Capt. R. B. Scott achieved his first solo.

There were eight visiting aeroplanes, including a Short "Scion" for demonstration.

NEWCASTLE-ON-TYNE

First solo flights were carried out last week at Cramlington by Messrs. A. E. George and R. A. Caws, and four new members joined the Newcastle Club. A total of 61 hr. was flown.

During the week the Club's "Puss Moth," flown by Mr. W. H. Williamson, left on a tour of the South of England, including a visit to the Isle of Wight for the Naval Review.

HERTS AND ESSEX

During the week ended July 10 the flying time at Broxbourne totalled 84 hr. 30 min., of which 28 hr. 30 min. was dual. Mr. "Bob" Barret, one of the Club's ground engineers, made his first solo. New flying members are Messrs. J. N. C. Wood, P. J. Lynch, and P. Gold.

The "Yager" Cup competition was held on Sunday, the winners being L. B. Pyle, E. Gay and S. Dack.

LEICESTERSHIRE

During the fortnight ended July 14, 69 hr. were flown by the Leicestershire Aero Club and Mr. A. A. Gordon-Cranmer, the first Air League pilot, made a first solo. Mr. E. W. Kennard obtained his "A" licence.

Twenty-one cross-countries were made to ten different aerodromes and forty-five machines, other than those used by the air line companies, visited the airport. Seventy-five civil machines arrived for the official opening, which is fully described elsewhere.

LEEMING

Yorkshire Aviation Services, Ltd., have been granted a ten years' lease of York municipal aerodrome, and it is hoped to begin flying there early in 1936. York will then join the select number of municipal aerodromes. The corporation are making a first-class aerodrome and York, situated as it is, will make an ideal stopping place for all air lines, particularly as the aerodrome is only five minutes from the railway station.

New pupils include Mr. Morgan Barwick, the master of the Bedale Hunt, Mr. Beasley, Mr. Low and a well-known sportsman, who at the moment, however, prefers to hide his light under a bushel.

Up to July 13, flying time, this month, amounted to 61 hr. 25 min.

NORTHAMPTONSHIRE

On Saturday the oldest inhabitant of Sulgrave, Mrs. Martha Smith, who is aged ninety-one, had her first flight in an aeroplane. She thoroughly enjoyed it and said she would give anything to learn to fly!

On Sunday the Duke of Gloucester called and had tea at Sywell on his way to Daventry. Several of the members visited the Leicester garden party.

On Sunday, July 21, Capt. G. R. D. Shaw, M.F.H., the Club's chairman, will be entertaining the local Chamber of Commerce for tea and all private owners are cordially invited.

READING

The beautiful weather of the past week has brought many old friends to the club.

Mr. Flower and Mr. I. M. S. Robson have made their first solos and Mr. Butler has qualified for his "A" licence. Major Higman has come from Spain to renew his "A" licence; Mr. Francis has also renewed his "A." Trial lessons have been taken by Mr. Stephenson and Miss Nicklin.

Mr. Luis Fontes, flying in his "Gipsy" six-engined "Hawk" in the Grosvenor Cup race, came in second, and made the fastest time of the day.

Mrs. Battye is flying a "Hawk Major" prior to taking delivery of her own machine of that type, and the Leicester Aero Club has taken delivery of a "Falcon." Mr. Arthur Cook of Bletchley has received his racing "Hawk." A "Falcon" has been delivered to Mr. Kennings, who is using it for business.

The flying hours for the week were 68 hr. 5 min.

CINQUE PORTS

An important event of last week was the visit of H.R.H. The Duke of Kent. He landed at Lympne on Tuesday in one of the Prince of Wales' "Rapides" and proceeded by road to Shorncliffe for lunch. The Duke left again in the afternoon and flew back to Hendon. His pilot was Flt. Lt. Mellor.

Mr. Eric Davis returned from Brussels and Berlin on Sunday. His conversations in Berlin with Herr Von Ribbentrop were very satisfactory. As the result of the talks with him and with other important personages, a really startling announcement about the forthcoming International Air Rally is expected shortly.

There has been a great improvement in the number of cross-country flights by members of the Club during the past week. An interesting appointment is that of Mr. J. G. Brown, the Chief Ground Engineer, to the Aeronautical Inspection Directory. He leaves Lympne very shortly and will take up duties as the A.I.D. Representative at the Armstrong-Whitworth works at Coventry.

Commander Villiers has renewed his "A" licence and a first solo was completed by Mr. A. D. S. Barr, in his own Klemm. Mrs. Graham-Watson has passed her "A" licence tests. Flying time up to Thursday registered 72 hr.

REDHILL

Members are starting to make real use of the large number of machines available and amongst cross-country flights carried out last week by members were those to Walsall, The Cotswold Club, Barton, Speke, Southampton and Leicester.

J. J. Veasey has passed his "B" licence tests and three more blind flying certificates were obtained by members. Mr. Robinson carried out "B" licence night flight and J. E. Eves passed "A" licence test. The total hours for the week ended July 12 were 90.

HANWORTH

Flying time for the past week was 62 hr. 35 min.

Messrs. Keeling, E. V. Inglesby, M. Prosser and C. Murray are new members, Mr. E. V. Inglesby has taken his "A" licence after one week's tuition, Messrs. W. R. P. K. Mason and I. G. Murray have renewed their "tickets," and Mr. C. J. Donala now owns a "Dragon."

Members will, no doubt, be pleased to learn that Mr. D. W. Llewellyn is available as an instructor.

To mark the reopening of the Hanworth country club a celebration dinner and dance will be held on July 19. Tickets may be obtained from and reservations made through, the Secretary.

At the Autogiro school 60 hr. 55 min. flying was logged. New pupils are Messrs. Fisher, Williamson and M. M. Jubb, the latter for the full "A" licence course.

First Autogiro solos were made by Mr. C. J. Melrose, the well-known Australian pilot, and Mr. C. F. Abbott, aviation representative of the Shell-Mex Company in the Argentine.

A C.30 was chartered by London Film Productions, Ltd., for taking aerial shots in connection with the new film "The Conquest of the Air," and a new C.30, fitted with a 200-h.p. Samson engine, ordered by the French Government, was delivered to Villacoublay.

The Magyar "Air Picnic"

THE six-day "flying picnic" in Hungary, which started at Matyasföld Aerodrome, Budapest, on July 13, has attracted entries from fifteen owner-pilots—one a woman—in Britain. Half the entries are of the cabin type, and are of British construction save for one American four-seater.

Another European Rally

BETWEEN August 2 and 6 the Klagenfurt branch of the Oesterreichischer Aero Club will be organising a rally flight to Carinthia, which will also include a visit to the Grossglockner Pass, up which an important hill-climb is being run for the first time. The centre will be Klagenfurt, and flights will be made to various centres of interest in the district.

Newcastle's New Airport

AT the official opening of Newcastle's new municipal airport at Woolsington on July 26, a flight of R.A.F. machines from the C.F.S. at Wittering will be present, and there will be a civic luncheon.

The Lord Mayor will entertain certain guests at the Mansion House on the Friday evening, and on the Saturday evening the Newcastle Aero Club will run a dinner and dance at Tilley's Barras Bridge Assembly Rooms, at which the Lord Mayor, members of the Airport Committee, competitors and visiting pilots will be the guests of the club. After the opening ceremony Sir Alan Cobham's team will carry out their usual programme and will also give a display on Saturday.

The new aerodrome, which has runs of 700 to 1,000 yards, is situated on the main Newcastle-Otterburn road, some 5½ miles from the centre of the city. Sir Philip Cunliffe-Lister will arrive at 12 noon.

On Saturday the London-Newcastle race will finish at approximately 4 p.m. at Woolsington, and the entry list is as follows:

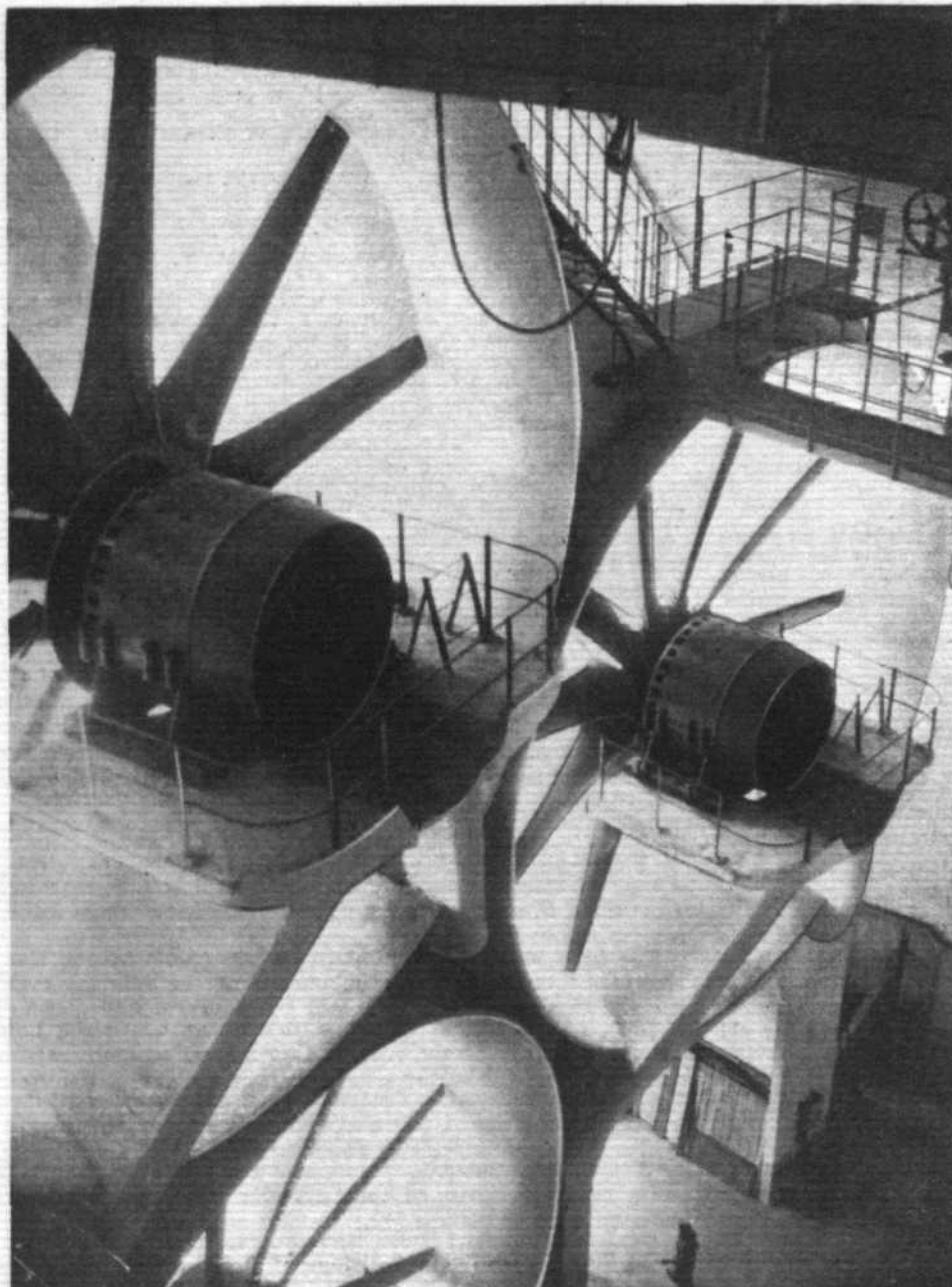
MACHINE.	PILOT.	ENTRANT.
D.H. "Moth" ...	L. Lipton ...	L. Lipton.
D.H. "Moth" ...	J. R. Mickethwait ...	J. R. Mickethwait.
Percival "Gull" ...	C. E. Gardner ...	P. Mursell.
Airspeed "Envoy" ...	V. J. Wheeler ...	North-Eastern Airways, Ltd.
Percival "Gull" ...	S. L. Turner ...	S. L. Turner.
Miles "Hawk" ...	L. Fontes ...	L. Fontes.
Miles "Hawk" ...	T. Rose ...	C. O. Powis.
Comper "Streak" ...	P. W. Avery ...	F. B. Warman.
Arrow "Active" ...	A. Henshaw ...	A. Henshaw.
B.A. "Eagle" ...	Ft./Lt. J. B. Wilson ...	The British Aircraft Mfg. Co.
Avro "Avian" ...	A. H. Tweddle ...	A. H. Tweddle.

There are, as a matter of fact, four seats available in the "Envoy" which has been entered by North-Eastern Airways, and anyone interested should write to the Heston office of this company.

On the Sunday morning the Yorkshire Aeroplane Club propose to organise a race from Woolsington to Yeadon, and substantial cash prizes are suggested.

THE FOUR WINDS

ITEMS OF INTEREST FROM ALL QUARTERS



THE "GIANT BLOWING-HOUSE" (according to a French news agency) recently inaugurated at Chalais-Meudon, France. In the striking view above are seen three of the six fans which produce a 112 m.p.h. draught in this remarkable wind tunnel

Chic

From an American contemporary.
"The new ship is a low-wing two-piece cabin monoplane."

Inter-Island Communication

Aircraft are to be despatched to the Pacific for communication work between the various French islands.

An Indian Appointment

Mr. A. N. I. Worger-Slade has been appointed as technical officer in the Civil Aviation Directorate of the Government of India. He left for India last Friday.

Lawrence's Generosity

It has been revealed that the donor of the anonymous education fund which benefits the children of R.A.F. officers was the late Aircraftman T. E. Shaw, or Colonel Lawrence of Arabia.

ROOM FOR EXPANSION: The Soviet stratosphere balloon "U.S.S.R.-1-bis" about to make its ascent on June 26, when it reached a height of 52,344 feet. The crew of three made a safe landing with the instruments, and it is said that valuable data on cosmic rays were obtained.

Twenty-five Years Ago

(From "Flight" of July 16, 1910)

"Gradually ascending in circles of about a mile in diameter, Walter Brookins, on his Wright machine, succeeded in beating the world's height record on Saturday last at Atlantic City. At the end of about 56 minutes flying he was at an altitude of 6,175 ft."

Slipped Timing

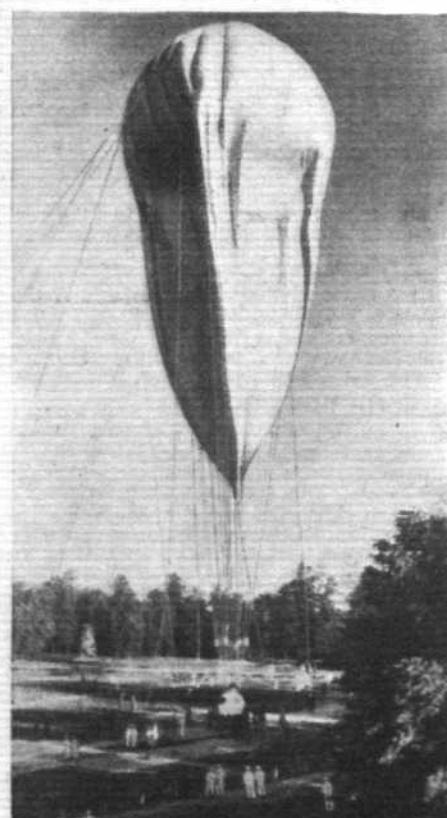
It is believed that the cause of the fatal crash of a Swedish military machine was the defective synchronising gear of a fixed gun which was being fired. The bullets, apparently, smashed the air-screw.

Co-operation

Selected officers of the St. John Ambulance Brigade will receive instruction in connection with the plans for anti-air raid precautions lately announced by the Government. They will eventually act as instructors.

Transamerican

Miss Laura Ingalls, presumably using her new long-range Lockheed "Orion," has flown from New York to Burbank, California, in 18 hr. 20 min. The west to east trip, for which the winds are more favourable, was accomplished by Mrs. Amelia Earhart Putnam in 17 hr. 8 min.



Wellsian

In "The Tunnel," a Gaumont-British film now being produced, and having as its subject the construction of a transatlantic tunnel, the "aeroplane of the future" is depicted. "Designed" in co-operation with aircraft experts, it is a "stratosphere helicopter."

A Lawrence Film

"Shots" of the air war on the Palestine Front, from official films, are included in a film called "Lawrence of Arabia," which is being generally released this week. Scenes at R.A.F. stations at which "Aircraftman Shaw" was stationed also appear in the film, which is based on material supplied to the producers, Ace Films, Ltd., by Mr. William Courtenay.

Kite-Flying by the R.A.F.

A recent Notice to Airmen warns pilots that between July 21 and August 7 kites may be flown during the hours of daylight at an altitude of 1,400 ft. on the cliff-top three miles east-north-east of Folkestone. Others, at an altitude of 1,550 ft., will be flown in the vicinity of Tetney, Lincolnshire, between August 9 and September 27, on Fridays only.



(Above) : The Caudron "Simouns" (Renault) which operate on the fast new mail services between Paris and Bordeaux, Havre, Strasbourg and Lille. (Below) : Recruits to Germany's Air Force, picked from thousands of young men enlisted under the conscription order, in training near Berlin

**Australian Air Ensign**

A Civil Air Ensign is to be flown by commercial aircraft in Australia. It will be of Royal Air Force blue, quartered by dark blue and cross-edged with white. The Union Jack will occupy the upper quarter next to the staff, and the Commonwealth Star will be in the quarter immediately below.

Team Tactics

Sixty bombers and thirty fighters left Madrid on June 27 on an instructional flight round Spain. The crews are carrying out exercises in radio transmission, bombing, machine gunnery, photography and navigation. Competition is provided by the allocation of marks for team results.

Consular Haste

Mr. Otto Thaning, the Danish Consul in Cape Town, left that city on Monday in his own machine to keep an appointment in London on Friday morning.

Inventions on Show

The Eleventh International Exhibition of Inventions will be held in the Central Hall, Westminster, from October 2-12. From November 20-30, inclusive, the exhibits will be transferred to St. George's Drill Hall, Newcastle-on-Tyne.

The B.G.A.'s Big Week

Preparations are being made to house forty machines and to entertain nearly a hundred pilots for the British Gliding Association's competitions at Sutton Bank, Yorkshire, from August 24 to September 1.

A Stratosphere Hitch

Just before dawn last Friday, while the gondola was being attached to the balloon which was to take Capt. Albert W. Stevens and Capt. Orvil Anderson into the stratosphere from Rapid City, South Dakota, U.S.A., the balloon burst. Five men working on the gondola had to jump for their lives from beneath the collapsing envelope.

Regal Interest in the "Fantome"

The King of the Belgians and Prince George of Denmark witnessed the demonstration, by Flt. Lt. C. Staniland, of the Fairey "Fantome" single-seater fighter entered for a replacement competition organised by Belgium. By Sunday the "Fantome" was the only machine to have arrived at Evre for test.

Forthcoming Events

Club Secretaries and others are invited to send particulars of important fixtures for inclusion in the list.

July 16-20. R.A.F. Athletics Championships, Uxbridge.	Aug. 17. Round the Isle of Wight Air Race and Portsmouth Air Trophy.
July 20. "Contact Air Race," Midland Aero Club.	Aug. 24-25. Third International Flying Meeting, Lympne.
July 20-21. Coupe Armand Esders, Aero Club de France.	Aug. 24-Sept. 1. National Gliding Competition, Sutton Bank.
July 26. Opening of Newcastle-upon-Tyne Municipal Airport.	Aug. 24-25. Cinque Ports Club, International Flying Meeting and Wakefield Cup Race.
July 27. London-Newcastle Race, Newcastle Aero Club.	Aug. 24-30. Raduno del Littorio, Rome. Reale Aero Club d'Italia.
July 27. Hanworth Club's Garden Party at Aldenham.	Sept. 6-7. King's Cup Air Race.
July 28. Private Owners' Garden Party, Ratcliffe, Leicester.	Sept. 14. Cinque Ports Club, Folkestone Aero Trophy Race.
July 31. Inter-Services Athletics Championships, Uxbridge.	Sept. 15. Gordon Bennett Balloon Race, Warsaw.
Aug. 10-20. Second International Austrian Alpine Flight.	Oct. 12-28. International Aircraft Exhibition, Milan.

JUST in CASE . . .

The Principal Points from the Home Office Circular on Air Raid Precautions

THE Home Office has addressed to all county councils and other local authorities in England and Wales, and the Scottish Office has similarly distributed in Scotland, a circular on the precautions which should be taken to protect civilians in the event of a hostile air raid. The following are the main points in the circular:—

The Government starts by pointing out that these measures in no way imply a risk of war in the near future, nor any relaxation of effort to ensure peace by all means in the Government's powers, and to use the machinery of the League of Nations and other instruments for guaranteeing peace. Developments in the air have made it possible for air attacks on a large scale to be delivered suddenly on many parts of the country, and despite the increase of the Air Force and ground defences it is impossible to guarantee immunity from attack. Therefore it is necessary to create organisations to minimise the consequences of air attack. The circular proceeds:—

"His Majesty's Government strongly repudiate the idea of attacks on the civil population by means of indiscriminate bombing. They will continue to make every effort to promote international agreement to obviate this peril. Provision must nevertheless be made to minimise the consequences of such attacks if ever delivered."

"The use of poison gas in war is forbidden by the Geneva Gas Protocol of 1925, to which this country and all the most important countries of Western Europe are parties, and His Majesty's Government sincerely hope that resort will never again be had to it. The risk of its being used is, nevertheless, a possibility which cannot be disregarded, and the plans must therefore include measures for the protection of the civil population against gas attack."

"His Majesty's Government have now set up the Air Raid Precautions Department of the Home Office to act on behalf of the various Government Departments concerned." This new Department will give advice to local authorities. Measures for safeguarding the civil population must be organised locally.

Bomb-proof Shelters Impracticable

"The construction on any extensive scale of shelters which would be proof against direct hits by bombs is impracticable. Such protection could be obtained only by means of concrete structures of great thickness or correspondingly costly works of equivalent strength, and apart from any other considerations the cost would be prohibitive. The Government cannot therefore undertake to provide money towards the construction of public bomb-proof shelters. On the other hand, effective protection against blast and splinters from bombs can be obtained at comparatively small cost, and it will be for occupiers of premises to provide this for themselves and their households, and where necessary for their workers and customers. Specific advice on this subject will be made available."

"Protection against gas will need separate treatment. Information will be published as to the means by which occupiers of premises can make them gas-proof. Furthermore, His Majesty's Government have decided to accumulate reserves of respirators and protective clothing and to issue them at the cost of the Exchequer to persons employed on air raid precautionary services—e.g., police, fire brigades, first-aid organisations—whose duties would require them to enter and to remain at work in gassed areas. Provision has already been made for obtaining a first supply of respirators of approved types which will be allotted partly for training purposes and partly as reserve stocks. Arrangements will similarly be made to accumulate supplies of bleach powder for decontamination purposes. The Government will also establish a Civilian Gas School to provide training in anti-gas measures for instructors who will be competent to give local training in their own districts."

"For assistance in the enrolment and training of emergency personnel, especially for medical and anti-gas services, and in the task of instructing the general public in air raid precautions, the Government have been able to arrange with the Order of St. John and the British Red Cross Society that their organisations will be placed at the disposal of both central and local governments."

"The following notes are intended to give a preliminary picture of the various services needed for the protection of the public against the effects of air attack. The arrangements to be made by local authorities in connection with each service will be described in a series of memoranda to be issued."

- "(a) Air Raid Warnings.—The Home Office will be responsible for the general arrangements, which will provide, so far as possible, means by which warning of an impending air attack may be communicated by telephone to the principal authorities in the districts which might be attacked."
- "(b) Lighting Restrictions.—The necessary Orders will be issued by the Home Office. The responsibility for their enforcement will rest on the police, but local authorities will be concerned in reducing or extinguishing street lighting."

"(c) Reporting of Damage.—It will be essential to work out locally means for ensuring that information about the fall of bombs and the nature of the damage caused, including the presence of gas, is reported promptly and passed on to those by whom it is needed."

"(d) Police Forces.—The measures for supplementing the regular police by the employment of the first police reserve and special constables will proceed on lines which are provided for in the existing organisation."

"(e) Fire Brigades.—The fire brigade service will need to be strengthened to enable it to deal effectively with the results of attack from the air. The Secretary of State has decided to appoint a Committee to explore this aspect of the problem."

"(f) Rescue Parties, etc.—In order to relieve the police and fire brigades for the work for which they are essential, provision must be made for organising squads of men, equipped and trained for working in damaged buildings which are not on fire, to rescue persons who are injured or trapped, and to shore up dangerous walls, etc."

"(g) Treatment of Casualties.—Provision must be made for the mobilisation and expansion of the medical and first-aid resources of each district so as to provide first-aid posts, casualty clearing stations, and hospitals for more extended treatment, together with an adequate ambulance service. It will be necessary to provide in this connection facilities for the decontamination of gas casualties and their clothing. Casualty clearing stations should be within easy reach of first-aid posts, but hospital treatment should as far as possible be provided outside areas of special danger. The detailed preparation of district schemes will be a matter for local organisation."

"(h) Anti-gas Service.—The decontamination of persons and their clothing has been mentioned as part of the treatment of casualties. Separate arrangements will have to be made for the decontamination of vehicles, buildings and their contents, and contaminated ground, as well as for the organisation of expert gas detectors who can determine whether a bombed area is free from gas or whether decontamination measures are needed."

"(i) Maintenance of Essential Public Services.—It will be of vital importance that public services such as water, gas and electricity should be kept going, at any rate on a basis of minimum requirements."

"(j) Road Repairs and Clearance of Debris.—Road repairs will naturally remain the responsibility of highway authorities."

Types of Action to be Taken

The following summary of the different types of action to be taken is published as an appendix:—

Action to be Taken by the Government.—Air raid warning scheme; general arrangements for lighting restrictions; accumulation of stocks of respirators and protective clothing for certain air raid precaution services; co-ordination of demands for hospital equipment and stores; accumulation of reserves of bleach powder for gas decontamination; arrangements for training instructors in anti-gas measures; technical advice on the protection of buildings against bomb damage and gas; administrative and technical advice to local authorities on all aspects of air raid precautions; advice to employers in industry and commerce on the protection of their premises and the organisation of their staffs; advice to householders and members of the public what to do in the event of air attack.

Action to be Taken by Local Authorities.—Preparation (in conjunction with neighbouring authorities) of schemes for first aid and hospital treatment of casualties, and decontamination of personnel, decontamination of material, rescue parties, emergency communication systems, maintenance of essential public services (in collaboration with the statutory undertakings), emergency road repairs, demolitions, removal of debris, etc.; recruitment and training (in conjunction with the Order of St. John and the British Red Cross Society and similar private bodies) of voluntary personnel to supplement or provide the foregoing services; measures for augmenting the police and fire services in an emergency; arrangements with regard to street lighting; arrangements for protecting public buildings from the effects of bombs and gas, and demonstrations of methods of protecting private houses, etc.; organisation (in conjunction with the Order of St. John and the British Red Cross Society) of public lectures and courses of instruction on anti-gas measures and air raid precautions generally.

Action by Employers in Industry and Commerce.—Arrangements for protecting their premises, and all persons in the premises, from the effects of bombs and gas; organisation of fire squads, first-aid services, etc., among their staffs.

Action by Householders and Members of the Public.—Learning means of protecting themselves and their houses from the effects of bombs and gas; learning simple rules of conduct during air raids and in cases of injury or gas contamination; volunteering for air raid precautions services in their own districts.

THE DOUZE HEURES D'ANGERS

Caudrons Take First Five Places

THE third annual Douze Heures d'Angers, the well-known French endurance contest, was flown recently over a double triangular course beginning and ending at the Angers (Avrille) Aerodrome. The entries were limited to touring and sports machines with two or more seats and a cylinder displacement not exceeding eight litres. Twelve machines qualified, one of them being an Autogiro which was in a special class of its own. Of the twelve, eight were Caudrons.

The race was won by Maurice Arnoux piloting a Caudron "Rafale" two-seater low-wing tourist monoplane, with cockpits closed in by sliding hoods. He covered 2,041 miles in the twelve hours of the contest at an average speed of 170 m.p.h., thus surpassing the previous record of 1,805 miles at an average speed of 150 m.p.h. made by Lacombe, another Caudron pilot, last year. Arnoux's machine had a six-cylinder-in-line, inverted, air-cooled Renault engine of 180 h.p.

Georges Novel, flying a three-seater low-wing Caudron cabin monoplane of the "Simoun" type, with an engine similar to that of Arnoux, finished second, covering 1,942 miles at an



Arnoux, the winner, stepping out of his Caudron "Rafale"

average speed of 162 m.p.h. Yves Lacombe, likewise piloting a Caudron "Simoun" (180 h.p. Renault), came in a close third, having flown 1,939 miles at an average of 161 m.p.h., while the pilot Serge Boris in a Caudron "Rafale" (180 h.p. Renault) finished a good fourth, covering 1,920 miles at an average of 160 m.p.h. Louis Gerard, in a "Simoun," came in fifth, having flown 1,805 miles at 150 m.p.h.

The race was unfortunately marred by an accident, the "Rafale" flown by Capt. Puget striking a line of trees when taking off after refuelling. The pilot and his passenger, Lieut. Guingot, were both killed.

THE PARLIAMENTARY AIR COMMITTEE SEES FOR ITSELF

LAST week the Parliamentary Air Committee, accompanied by Labour members of the Opposition, paid an informal visit to Coventry and Manchester for the purpose of gaining first-hand information on the processes of aircraft manufacture.

The party assembled at the House of Commons at 10 a.m., and, leaving Croydon in an Avro 642, arrived at the Whitley aerodrome of the Armstrong-Whitworth Aircraft Company before 11 o'clock, where they were welcomed by Sir John Siddeley and Mr. R. J. Parrott, who personally conducted them over the factory. One of the members, for a distressed area, said it did his heart good to see such a hive of industry after the deserted plants in his own constituency.

A visit was then made to the Parkside works of Armstrong Siddeley Motors, where the many types of Siddeley aero engines were seen in course of construction, and the party was entertained to lunch.

Before the party left for Manchester Flt. Lt. Turner-Hughes gave an exhibition of stunt flying and aerobatics on an A.W. "Scimitar" which thrilled the visitors. Mr. H. K. Hales remarked that he had owned and flown an Antoinette plane

as far back as 1909; he bought it from a syndicate for £150, and took it into the air without any tuition! He did not say how he came down—that was left to his hearers' imagination.

From Whitley the M.P.s flew to the Woodford aerodrome of A. V. Roe and Co. at Manchester, where they were met by Mr. R. H. Dobson and Mr. R. Chadwick and there shown two new types of aircraft; from Woodford a detour was made, by motor coach, to the company's works at Newton Heath. Leaving Woodford in the evening, the members were back in the House shortly after eight o'clock. For several members the day was a first experience of real flying, and all expressed their pleasure.

The party consisted of Col. J. Baldwin-Webb (Wrekin), Mr. Chorlton (Platting, Manchester), Mr. W. Craven-Ellis (Southampton), Mr. D. L. Davies (Pontypridd), Mr. H. K. Hales (Hanley), Mr. G. H. Hall (Aberdare), Mr. W. Mabane (Huddersfield), Mr. A. C. Reed (Exeter), Mr. E. W. Salt (Yardley), Mr. O. E. Simmonds (Duddeston), Captain W. S. Strickland (Coventry), Mr. C. H. Summersby (Shoreditch), Mr. G. A. Griffiths (Hemsworth), and Mr. Duncan Sandys (Norwood).

ROYAL AERO CLUB OFFICIAL NOTICES

THE Royal Aero Club is anxious to prepare a complete list of private owners of aircraft. There are many occasions on which the Club is in a position to give information on touring matters and issue notices of air meetings both at home and abroad, and it is prepared to do this irrespective of membership. All the Club asks is that every private owner should send a postcard, addressed to the Royal Aero Club, 119, Piccadilly, London, W.1, giving his name and address and registration marks of his aircraft.

Coupe Féminine Hélène Boucher.—The Royal Aero Club has entered Mrs. Beatrice Macdonald for the Coupe Féminine Hélène Boucher, which takes place on August 31 over a Paris-Cannes course.

Raduno del Littorio.—The Italian Aero Club has extended to British private owners, through the Royal Aero Club, an invitation to take part in the Raduno del Littorio (Italian Aerial Rally), which takes place from August 24 to 30. Competitors taking part will be the guests of the Reale Aero Club d'Italia from August 25 to August 31.

Osterreichischer Alpenflug.—An invitation has been extended by the Austrian Aero Club to British air tourists to take part in the second International Austrian Alpine Flight, to be held on August 10-20.

Air Rally in Brittany.—The Aero Club de France has extended an invitation to British air tourists to take part in an Air Rally round Brittany. The event covers three days—July 26, 27 and 28.

Regulations and entry forms in connection with all the above events may be obtained from the Secretary, Royal Aero Club, 119, Piccadilly, London, W.1, on application.

Northern Heights Model Flying Club

THE runners-up in the inter-club team contest at the Northern Heights Model Flying Club's Gala Day were the Northern Heights M.F.C. and not, as inadvertently reported, another club.

COMMERCIAL AVIATION

— AIRLINES ————— AIRPORTS —



LEICESTER'S NEW AIRPORT : This aerial view taken by a "Flight" photographer of the new Leicester airport, clearly shows the good approaches. Land has been reserved for possible expansion and to prevent building in the vicinity.]

THE WEEK AT CROYDON

Aerial Yachting : The New Passport System : Dust unto Dust : Making up Time : Multi-engined Safety : Inventive Visitors

MONDAY is my day for sending these notes and, if late, I am pursued by ten thousand devils—printer's devils. Thus, I had no time last week to describe Lord Beaverbrook's departure on his air cruise of Europe. This was real aerial yachting: the big burnished metal Douglas, with gay house-flag flying, the pilot (Chevalier of the Oranje Nassau Order) and first officer in white trousers and cap-covers, and the steward, plump and genial in a short jacket, like the fat boy in "Pickwick," gloating over the rare viands and cases of good things to drink, as they were put aboard. The weather was perfect and the party was seen off by a group of fair ladies and lean, sun-bronzed men.

Commercial Air Hire has operated to full capacity and duplicated many services to the Continent. A record week for special charter has been experienced. Inner Circle Air Lines has done good business, as from the start I was sure that this eminently useful air line was bound to. More and more people use the service to visit, in cleanliness and comfort, friends who live on the other side of London, instead of spending the day in a traffic jam, begrimed and dazed with petrol fumes.

D.L.H., the German Air Lines, booked the complete Cambridge boat-race crew last week. They flew in a special Ju. 52 to Frankfort to take part in a regatta. It is not known if the tox insisted on taking a back seat and on holding two pieces of string in his hands throughout the journey. Unkind people suggest flying Oxford to some country devoid of rivers.

Within a comparatively short time the new system will be in force of examining passports before luggage. The Home Office has promised to look closely into the matter of speeding up passport examination, and we are confident there will be a great improvement. The examining officers themselves are as helpful as is humanly possible, consistent with the proper performance of their duties.

There have been complaints of pilots blowing dust all over everything when taking off. Owing to extensive activities on the tarmac there are huge piles of the stuff wherever one goes and a dustless departure is not easy. There is a delightful "train," consisting of something closely resembling the "Rocket," full of tar and belching black fumes, which proceeds backwards towed by a steam roller said to have George Stephenson's autograph on its fuselage. This outfit puffs round at an estimated speed of 3 m.p.h. There is also a horse which

may have won the 1888 Derby and certainly gave the idea for the first slow motion film.

The Brussels International Exhibition has made good business for Imperial Airways and Sabena. Never have I seen so many of Sabena's Fokker F7b machines arriving and departing.

When a large aeroplane arrived recently one engine emitted a loud report and a cloud of black smoke as it stopped. An argument arose amongst visitors taking tea on the hotel terrace as to whether this was not a salute in honour of the fact that an important personage was on board.

One day last week Cdr. Smirnoff, of the K.L.M., showed what could be done to make up time on a journey with a fast machine. The Douglas he was flying left Berlin eighty-one minutes behind schedule and arrived here only thirteen minutes behind schedule. There was no following wind; these were light and variable.

The loss of a three-engined machine—not of the very latest design—in the Channel, due to trouble which may have affected more than one engine, has raised the ancient question of whether flying boats should be used over water. It is an open secret that on rare occasions tri-motor machines fly all the way from the coast, when fully loaded (and even more than fully loaded) with one engine out of action. Even the twin-engined Farman "Goliaths" used to come into Croydon at times on one engine. It is recorded that once a representative of a company using modern landplanes over water, when this question was raised, remarked to certain City Fathers in a North of England town: "Gentlemen, our business is to fly—we are not going boating."

Another story concerning airport visitors is the perfectly true one of the gentleman who explained to a large party that the beam of light from the Aldis lamp, focussed on the pilot as a signal to depart, was the new beam along which the pilot flew—straight for the control tower!

A. VIATOR.

Radio Masts at Renfrew

TWO radio masts 83 ft. high have been erected in the north corner of Renfrew airport. These will be marked in the usual manner with flags by day and red obstruction lights by night—which suggests that forlorn transport pilots will presently be assisted by radio and D/F in these parts.

NO SINECURE

Impressions of a Trip to Paris with the Morning Papers

THE belated traveller, walking or motoring wearily along the mistily lighted Purley Way at four in the morning, would probably be surprised to see so much relative activity at Croydon Airport. If he wandered unheeded on to the tarmac he might be even more surprised. He would see, perhaps, a single floodlight casting an unblinking line of limelight across the hills and dales of the aerodrome, two silhouetted figures in the lighted control tower, voiceless uniformed figures on the tarmac, and lights in several hangars. Furthermore, he would hear at least four engines being warmed or run up as the two newspaper machines prepared to take off for Paris.

As most people realise, the job of the early morning newspaper pilot is no sinecure. Not only is he working on out-of-date and sometimes actively incorrect weather reports, but he is setting off with the knowledge that, somehow or other, he must get into Le Bourget—early mist and low cloud notwithstanding. Furthermore, he sets off with the knowledge that he may need to fly quite blind most of the time.

A fortnight ago, for instance, I had the good fortune to be able to fly as pseudo-second pilot to Mr. Pugh in the Commercial Air Hire Avro 642. Although he has been on this particular job for a very considerable time, he still looks on it as one with immense and unplumbed abominable characteristics. On that particular morning the 642 was hoisted off Croydon under a clear starlit sky, yet before the coast was reached the grey patchwork below was flecked with clouds and the Channel was, for the most part, out of sight.

Bexhill, as Mr. Pugh, after a thoughtful piece of work with a pocket slide-rule, announced, was reached at an average of 162 m.p.h. with a following wind. At three thousand feet over the Channel—or, more accurately, over a cloud carpet with the sun showing the finest of bronze rims on its extremity—he produced his meteorological report chart, an example of which is reproduced on this page. By means of an ingenious code his operator can make reports of the conditions at all the salient points on the journey. Not only are cloud heights and visibility figures given, but such features as the height of a haze top, indicating a change of upper temperature, can be reported. Special medals should be struck for all radio operators on work of this kind. Messrs. Burgess and Philpot not only have a very considerable responsibility in guiding

either Mr. Pugh or Mr. Noddings to a landing at Le Bourget in bad visibility, but, at the same time, they cannot altogether forget the not inconsiderable risks in the way that an extremely busy pilot may be able to do.

On this occasion the official morning weather report was just as wrong as it could have been. The "two-tenths cloud" over the Somme Valley turned out to be "ten-tenths cloud," and nothing more than a very occasional vaguely outlined road or field was seen. The cloud base must have been sitting more or less right down on Beauvais Ridge—of ill-fated memory.

Meantime, D/F bearings from Paris had shown that we were dead on our course, and a glance at the ever-useful slide-rule produced the estimated time of arrival, and the 642 was nosed confidently through the clouds at the psychological moment with rain pouring off the screen. Bearings were received with heartening frequency and the directional gyro nob was pulled and turned time and again. Mr. Philpot thought he heard the "motor" signal, indicating that our engines had been heard by the control, but one cannot work on assumptions under such circumstances. Sure enough, though, before we fell out of the cloud base with the whole of urban Paris stretched out below us, the bearings had changed right round and we finally crept into Le Bourget from the far side.

In really bad conditions, of course, the pilot must depend entirely on D/F bearings and on the accuracy of his final approach from the "blind" direction, for which there is a run of one and a quarter miles on the aerodrome itself. The last minutes require deadly accurate work on the compass or the directional gyro if the radio masts are to be avoided. This "ZZ" system was originally evolved at Tempelhof and is the basis of the present Army Air Corps system being developed in America. There, however, directional and marker beacons are used in place of D/F and of the aural sensitivity of the control officer.

And so to omelettes and coffee. On the way home I had a chance of flying the 642—if keeping it on a course with the directional gyro and correcting bumps can be considered as "flying the machine." Present-day commercial types must be flown more or less blind for the first time, there being nothing to give one an "horizon." H. A. T.

COMMERCIAL AIR HIRE LTD.

CROYDON

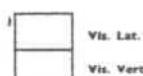
Date

Pilot

To

2000 M.

2000 M.



1000 M.
900
800
700
600
500
400
300
200
100

1000 M.
900
800
700
600
500
400
300
200
100

CODE BY W/T.
= TO MET GED.

PHHN, N, C, L, hh V, V, TT, Z, Z, Z, Z

OTHER CONDITIONS in plain language, i.e.—
Ice forming at 1000 feet.
Cloud halo 360°.

P = Position (1-8).
HH = Aircraft Height in 100's feet.
NL = Amount of low cloud (0-9).
NN = .. high

C_L = Low Cloud
1 = Cu. 5 = Cu. NB.
2 = ST. 6 = FR. ST.
3 = NB. ST. 9 = Fog.
4 = ST. Cu.

ll = Base of low cloud in 100's feet.
hh = Top of

V_H = Visibility Horizontal. (0-4).
V_L = Vis. .. Lat. (0-4).
TT = Temperature.
t = Diff. in temp.

ZIZI = Haze Tops in 100's feet.
C_H = High Cloud.

1 = C. 6 = AL. ST.
2 = Cl. ST. 7 = AL. Cu., AL. ST.
3 = Cl. Cu. ST.
4 = Anvil Cl. 8 = AL. Cu., AL. ST.
5 = AL. Cu. and Cl.

METEOROLOGICAL RESEARCH: The chart used by Commercial Air Hire pilots for recording weather conditions on the Paris run.

Commercial Aviation

New Zealand's Air Services

IN the course of the past few months *Flight* has recorded piecemeal many of the commercial aviation developments in New Zealand. However, since service licences have now been issued it would be as well to detail the position as it appeared at the end of May.

A few months ago Cook Strait Airways, Ltd., was registered with a capital of £50,000. A daily service was proposed connecting Nelson, Blenheim and Wellington—a total distance of approximately 140 miles. Capt. Bolt, the chief pilot of the company, is at present on a visit to America and this country, and is making an investigation of the types of machines likely to be suitable for the service.

Union Airways of N.Z., Ltd., in which the Union Steamship Company is largely interested, was registered on May 1 with a nominal capital of £100,000, and is to start an air service between Palmerston North and Dunedin, in the southern portion of the South Island. The distance from point to point is a little less than 500 miles, and both Blenheim and Christchurch will also be served. Mr. N. S. Falla, the managing director of the U.S.S. Company and chairman of Union Airways, has also visited England to purchase new machines which are to be entirely of British manufacture. Sqn. Ldr. M. C. McGregor has been appointed service manager and has already been to England.



The projected and actual services in New Zealand.

Another company, Great Pacific Airways (N.Z.), Ltd., has been granted a licence to run a trunk service from Auckland to Dunedin, via New Plymouth, Wanganui, Palmerston North, Wellington, Blenheim, Christchurch and Timaru. The call at Wellington will be conditional on the provision of an emergency landing ground. Among the provisional directorate is Sir Charles Kingsford Smith.

Licences have also been granted to Air Travel (N.Z.), Ltd., for a West Coast service, and to East Coast Airways, Ltd., for a service linking Gisborne and Napier.

The time is rapidly drawing near when New Zealand will need separate control and unified administration for civil aviation development. At present the Transport Co-ordination Board deals with applications for licences for air services, but it appears that this Board has no power to license machines, personnel or aerodromes. It can, in fact, only license air services, yet in spite of this the Board recently refused licences to certain concerns because they proposed using the Rongotai aerodrome at Wellington, although this is actually classed as suitable for all types of aeroplanes under the Air Navigation Act.

In the Philippines

A CONCERN known as the Philippine Air Taxi Co. is reported to be preparing plans for the inauguration of a passenger service between Manila, Paracala, and Masbate in the Philippine Isles.

Another Hillman Extension

LAST Monday Hillman Airways extended their thrice daily Brussels service to Antwerp and cut out the stop at Ostend. Instead the machine will call at Le Zoute (Knocke), and passengers are now given free tickets from there by surface transport to any Belgian coastal resort.

The Ramsgate-Ostend ferry service, which had been waiting only for Customs facilities, started yesterday.

Weather Broadcasts

THE new radio-meteorological station at Borough Hill, Northamptonshire, mentioned in *Flight* of June 20, started serious transmission on Wednesday of last week. Heston's station had closed down on the previous day.

Transmissions from the new station will be on a frequency of 254 kc/s (1,186 m) and not 235 kc/s (1,186 m) as originally suggested. Heston's previous time-table of broadcasts will be in force for the time being.

France's Air Mail System

THE internal air mail system of the Air Bleu Company was started on July 10. Four Caudron "Simoun" low-wing monoplanes took off from Le Bourget in the morning, bound for Lille, Le Havre, Strasbourg and Bordeaux. General Denain and M. Mandel, the Minister of Posts, were present at the start of the service.

All the machines reached their destinations safely. The Lille service also called at Arras, the Le Havre service at Rouen, the Strasbourg service at Nancy, and the Bordeaux service at Tours and Poitiers. The last run, which is the longest, was covered in a matter of two and a half hours.

A Real Ferry

UNITED AIRWAYS have purchased an Armstrong-Whitworth "Argosy" from Imperial Airways. This will be used for the Blackpool-Ramsey service during the very busy season and for any massed charter trips for which its mighty accommodation will make it economical.

In its United form the "Argosy" will have seats for twenty-nine passengers, with a reduced range, but no doubt more passengers could be stuffed into the luggage compartment during Wakes Week. Mr. E. B. Fielden, who is one of the United Airways' pilots, has previously had a lot of experience in small field joy-riding work with an "Argosy," so the massed passengers will be in safe hands.

At Whitchurch

ONE thousand eight hundred and sixty fare-paying passengers passed through Bristol Airport between April 1 and June 30. This does not include passengers in transit on through services.

The new passenger station is nearing completion and should be ready for use almost immediately. This building includes a main passenger hall, booking offices, customs accommodation, meteorological offices, teleprinter room, wireless and control room, and the airport manager's office.

It is hoped that the radio station, which is being erected by the Air Ministry, will be ready for use before the end of July. The installation of floodlighting and other night-flying equipment should be completed some time during September.

Liverpool Goes Ahead

SINCE, in the issue of March 21, *Flight* gave details of the blind approach scheme being planned for Speke airport, work has been going ahead rapidly. As explained at the time, the Marconi Company is working on the radio beacons, of which there will be three—one, at the end of the longest run, for guidance, and two, at five miles and on the boundary, for "marker" purposes. The second marker beacon will have a neon light, so that in conditions of medium or poor visibility, or at night, the incoming pilot will be able to gauge his height.

Floodlights have been installed on each of the four sides of the aerodrome, and these will soon be in use. The boundary and necessary local obstruction lights have been installed, and work on the foundations of the hangar and control block has started. Drainage work has been completed and additional ground is being levelled, though it will be three months before this is ready for use.

A STORM IN A TEACUP (PART II)

The War Continues and a New and Fearsome Problem Arises

THE Croydon "Buffet war" is still going strong. The authorities, writes a correspondent, admit that tea drinking does not affect the licence—that was mere bluff. They have closed the place to all air line staffs, but it is early yet to consider designs for the medal, as the war is by no means over. The tenants were referred to the Brewery Company, and the company referred them back to the Ministry. Both have been considerably shaken.

Meanwhile, the most impossible situations have arisen. Foreign pilots, asked to take coffee with passengers, are amazed when refused. International situations arise in twenty seconds! A manager, with distinguished clients about to depart for a European air cruise, awaiting a late member of the party in the Main Hall, desired to offer coffee. He dared not risk the insult of a flat refusal of service in the buffet. Yet it was his duty to look after his company's clients. The same manager, refused admission to the buffet (reserved for the gentry), is received with ingratiating bows at the hotel under the same management when he proposes to spend £50 or so in the work of entertaining his company's guests.

Another Ministerial bomb has now exploded. Office tenancies at Croydon have always been on the usual terms whereby the landlord says, in effect, "This magnificent two by four office costs £200 per annum, take it or leave it," and tenant, smiling bravely and having no alternative, says "Yes, thanks awfully."

Guernsey Development

THE rumour that Cobham Air Routes had temporarily suspended their service has given rise to more and more rumours. The fact is that the company is held up pending the extension work on L'Erée aerodrome and the purchase of much larger machines for which the aerodrome in Guernsey is being improved.

Meanwhile it is definite that some interesting announcements will be made within the next month or so. Nothing, however, can be said with certainty at present, although the firm is linked, in rumour, with another very well-known one.

North Eastern Airways Give It Up

WITHOUT absolute regularity the general public cannot be expected to take a new air line seriously. During this spring and summer the pilots of North Eastern Airways have been doing their best to run the Newcastle and Edinburgh line to schedule, and the "Envoy" have been carrying small but promising loads.

But the complete lack of ground radio and D/F facilities on the run has proved an impossible handicap, and on several occasions, even during the good months, the service, or parts thereof, has been cancelled. Barton could not help the pilots to any extent, and the idea of flying into unknown weather conditions cannot be tolerated. Furthermore, of course, when visibility is below a thousand yards D/F is absolutely essential for the approach to an aerodrome.

At the end of this month, therefore, North Eastern Airways will be closing down, though the office at Heston, where the company acts as agents for P.S.I.O.W.A., will remain. In due course, probably next spring, their Alp Air project, details of which were given in *Flight* of June 13, will probably materialise with a direct service to Montreux, where an aerodrome is being laid out.

At Heston

IN the week ended July 10 Birkett Air Service made thirty-six air taxi flights and covered 5,430 miles. This, however, appears to be an average week rather than an exceptional one.

Air Commerce are now awaiting delivery of a second Monospar, the "Jubilee" model. Their "Puss Moth" has now been replaced by a second "Leopard."

The Air Hire "Falcon" has left on its fifth Continental trip since it was christened on May 5.

A North-Eastern Airways' "Envoy" made the journey from Edinburgh to Heston in 2½ hours on July 10. This is especially remarkable as there was practically no wind at the time, such as there was being unfavourable. The time included the customary ten-minute stops at Newcastle and Leeds.

New accommodation is now being erected, but the demand far exceeds the supply. An opportunity for dizzy Ministerial finance is thus created. Interested firms have been circularised and asked how much they will pay, and requesting an immediate tender. Firms are confronted by the possibility of having to pay ten times what a place is worth when the bidding is fierce. Companies holding premises under the old system wonder if their offices will be auctioned over their heads at the expiration of the present leases. Happily, the circularised firms have combined and unanimously refused to deal with the Ministry on these terms.

Another result of this strange action is that, for the first time in the history of this Airport, there is serious talk of a Tenants' Protection Society with a legal adviser, and so on, in order to resist further oppression. If the pleasant relations existing in the past between Airport Owner and Airport User are to be ruptured, it will certainly be no fault of the companies using the place.

A word in season appears to be indicated. This Airport is not the equivalent of some Admiralty Dockyard, where disobedience to orders means the yardarm or its modern counterpart.

It more nearly resembles the Port of London, where shipping and other revenue-producing companies are the valued and courteously treated tenants of the Port of London Authority.

Operational Speeds

THE ancient arguments concerning the relations between maximum, cruising and operational speeds—and between American and English transport types—have been nicely cleared up since the Douglas and other types have been in use in Europe.

Last week, to quote an example, Mr. A. H. Pass, of Pass and Joyce, Ltd., flew by Swissair to Zurich and back. The Douglas D.C.2 made the outward trip to Basle in 2 hr. 30 min., and the return trip in 2 hr. 35 min. Taking the distance from Croydon to Basle in a straight line as 440 miles, the average speeds work out at 176 m.p.h. and 170 m.p.h. Allowing for the fact that the wind was not likely to change right round in the time between the two journeys, 170 m.p.h. can reasonably be taken as the *operational* speed of the Douglas in service—and flown at its operational height.

Service at Croydon

NO one knows better than the air line or taxi operator in a comparatively small way, and the secretary of a modest club or school, how the lengthy absence of a single machine can upset all calculations. They may be losing quite a lot of money, and certainly quite a lot of prospective goodwill among disappointed customers or pupils. Even the private owner resents the idea of being without his machine for three weeks, or even longer.

Yet none of these people can afford to carry a heavy stock of spares, even if they are in a position to deal with big overhauls and repairs, and quite a minor part may not be obtainable from the manufacturers for a considerable and valuable period of time.

Looking through the continually expanding workshops of Rollason Aircraft Services, Ltd., at Croydon, recently, one was struck not only by the quantity of work going through the shops but by the impressive stock of spares carried. Mr. W. A. Rollason, who is assisted by Mr. Kent and a staff of twenty or so, has had a very long experience of service work and knows exactly what spares are most necessary for all types of D.H. machines in particular, and the firm can carry these in useful quantity. Furthermore, the "crash" spares are separated from A.G.S. parts and the like, and these consist of such likely replacements as undercarriage legs, fuselage sides, spars, engine mountings and cowlings. Something like two thousand pounds worth of parts are carried.

Needless to say, the firm can carry out work on any type of machine and engine, and have the fullest equipment for dealing with engine overhaul and testing, electron welding, sheet-metal work and tank testing, paintwork and electrical installations generally. They were, one believes, the first to fit a fixed aerial to the "Dragon" "Rollasons" can, in fact, make anything and modify anything to order!

THE INDUSTRY

The Hawker-Siddeley Issue

THE Hawker-Siddeley Aircraft Co., the formation of which has already been announced in *Flight*, has this week made an issue of 1,000,000 5 per cent. cumulative preference shares of £1 each at par, and 1,000,000 ordinary shares of 5s. each at 15s. per share.



Sir John D. Siddeley

Dominions Insurance Co., Ltd.,—is one whose name is synonymous with sound finance and paying concerns.

Sir John D. Siddeley has agreed to continue as chairman of the Armstrong Siddeley Development Co. for a period of two years, and the aviation group which was previously controlled by the Armstrong Siddeley Development Co. will not, therefore, lose the benefit of his guidance for the time being.

It is difficult to believe that Sir John is virtually considering giving up his connection with aviation. He will be remembered not only for the work he did during the War in organising the supply of aero engines, but also for the courage he has had in building large commercial aircraft, for adopting Fokker designs, for starting Britain's first air university at Hamble, and for adhering to the double-row radial air-cooled aero engine, a design which the most prominent American factories are now beginning to realise is one which should be developed still farther. Furthermore, Armstrong-Whitworth aircraft were among the earliest all-metal machines to be used in quantity in the Royal Air Force.

As will be remembered from the original announcement, the Hawker-Siddeley Aircraft Co. has also acquired, through the Armstrong Siddeley Development Co., control of Armstrong Siddeley Motors, Ltd., the firm which manufactures Armstrong Siddeley motor cars and Armstrong Siddeley aero engines. In this connection it should be noted that both Mr. Cyril D. Siddeley and Mr. Ernest H. Siddeley will continue in their present employment under a ten-year contract.

The issue was heavily over-subscribed and the lists closed within five minutes of opening last Tuesday morning.



RESULT OF AN ACCIDENT. This is one of two pairs of goggles worn by the occupants of a club machine which crashed recently at Southampton. An interesting feature of the goggles, which have been sent to *Flight* for inspection, is that both pairs are damaged in an almost identical manner. Although the Triplex lenses of the goggles—Model 209, supplied by D. Lewis, Ltd., of Great Portland Street—were so badly cracked, no glass splintered out, and the eyes of the wearers were undamaged.

Changes in Triplex Board

IMPORTANT changes in the board of the Triplex Safety Glass Co., Ltd., are announced following the recent death of Mr. Reginald Delpech, the founder and sales director of the company.

Major A. E. Phillips, D.S.O., the chairman, has retired, and Mr. Graham Cunningham, managing director, becomes chairman and managing director. Mr. W. R. Lyttleton remains on the board as technical director, and the following new directors have been appointed: Miss McDuell, the secretary, who has been with the company since 1915; Captain Victor Shepherd, general sales manager; and Mr. A. Cochrane, works manager of the King's Norton factory, Birmingham.

The object of the reconstitution of the board is to have only directors who are actively engaged in the company's business.

An Aviation Appointment

M. R. O. W. H. COOKE, who was for many years with the De Havilland Company as publicity manager, and latterly with Major J. C. Savage, of sky-writing fame, has joined the Board of Ormiston's Alumina, Ltd., and will in future be in charge of sales and publicity.

Aluminium Welding Flux

ORMISTON'S ALUMINA, LTD., has received an order from the Air Ministry for aluminium welding flux. This firm has recently moved to a large factory at Brentford, on the Great West Road, where it will continue to specialise in welding and electrical fluxes. Dr. H. O. Ormiston, the founder of the firm, who was engaged on aero engine work during the War, has for some thirty years been closely concerned with the problems of non-corrosive fluxes.

PUBLICATIONS RECEIVED

Signpost to the Road Houses, Country Clubs and better and brighter Inns and Hotels of England. By W. G. McMinnies. Price 3s. 6d. net, Simpkin Marshall Ltd., Stationers' Hall Court, London, E.C.4.

By Accident. By Jane Bird. Price 7s. 6d. net, Peter Davies Ltd., 30, Henrietta Street, London, W.C.2.

The Airman's Year Book and Light Aeroplane Manual, 1935. Price 5s. net; Pilot's "A" Licence. Compiled by John F. Leeming. Price 3s. 6d. net. Sir Isaac Pitman and Sons Ltd., Parker Street, Kingsway, London, W.C.2.

Aeronautical Research Committee Reports and Memoranda No. 1649: Wall Interference and Depth Effect in the R.A.F. Seaplane Tank and Scale Effect Tests on Hulls of Three Sizes, by L. P. Coombes, D. W. Bottle, W. G. A. Perring and L. Johnston. Price 3s. net, H.M. Stationery Office, London, W.C.2.

Alerte aux Gaz! By S. de Stackelberg. Price 4 francs. Librairie Payot and Cie, France.

The Air is Our Concern, edited by Nigel Tangye. Price 6s. net. Methuen and Co., Ltd., 36, Essex Street, London, W.C.2.

Structural Design of Metal Airplanes, by J. E. Younger. Price 24s. net. McGraw-Hill Publishing Co., Ltd., Aldwych House, London, W.C.2.

Catalogue: Kollsman Precision Aircraft Instruments. Kollsman Instrument Co., 1, Junius Street, Brooklyn, N.Y., U.S.A.

Handbook of the Science Museum Collections Illustrating Heavier-than-Air Aircraft, by J. M. Davy. Price 2s. 6d. net. H.M. Stationery Office, London, W.C.2.

"Cooledge" Calendar for July (bearing portrait of Otto, co-designer of the gas engine). Obtainable from Fletcher, Miller, Ltd., Alma Mills, Dukinfield, Manchester.

NEW COMPANIES

WESTLAND AIRCRAFT LIMITED, "private" company. Nominal capital £100 in 5s. shares. Objects are to carry on business as manufacturers of and dealers in aircraft of every description, components, equipment and engines, etc. The first directors are not named. Solicitors: Theodore Goddard & Co., 10, Serjeant's Inn, London, E.C.4.

MARINE AIRWAYS LIMITED, "private" company. Nominal capital £21,000 in 20,000 ordinary shares of £1 each, and 20,000 deferred shares of 1s. each. Objects: To establish and develop an air service throughout the British Empire and places convenient thereto, and in particular by ocean and other over-water routes by means of flying boats, etc., to manufacture and deal in aircraft and aerodrome equipment, etc. Directors: Major Sir Ralph G. C. Glyn and Lord Sempill Secretary (pro tem): G. Ogilvie Mitchell. Registered office: 4, Cleveland Square, St. James, London, S.W.

EAGLE GLIDING AND FLYING CLUB LTD. Private company. Capital, £500 in £1 shares. Objects: To establish and carry on a gliding and flying club, etc. First directors to be appointed by the subscribers. Secretary: Harold J. Turner, 52, South Road, Handsworth, Birmingham. Registered office: 109, Colmore Row, Birmingham.

AERONAUTICAL PATENT SPECIFICATIONS

(Published July 18, 1935.)

(The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

35258. HARLEY, M. C.: Illuminating devices for aircraft (430,421).

36112. BAYNES, L. B.: Pusher airscrew aeroplanes (430,662).

3018. SIEMENS & HALSKE AKT.-GES.: Cooling of air-cooled radial-cylinder engines on aircraft (430,443).

18040. RHODIUS, R.: Wooden air screws or propellers having protective coatings (430,383).

18527. SIEMENS & HALSKE AKT.-GES.: Control mechanism for adjusting control surfaces of aircraft and operating by means of a fluid-pressure medium (430,610).

26974. LAFOND, G.: Variable-pitch propellers (430,557).